RAILROAD GAZETTE

FRIDAY, MARCH 31, 1899.

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Contributions.

The 4 ft. 9 in. Gage.

To the Editor of the Railroad Gazette:

In these days when uniformity in railroad practice seems to be considered desirable, it is strange that two gages should still be used. Reference is made to the 4 ft. 8½ in. gage and the 4 ft. 9 in. This, too, when exactly the same gaged cars are used on all roads.

The objections to two gages, and particularly to the wide gage are briefly stated below:

Assuming sufficient clearance with the narrow gage, and of this there is abundant evidence, there must be too much with the wide gage. This unnecessary width permits greater slewing of trucks, with increased wear of flanges and head of rail, and increased tendency and power to spread the rails, or to climb the rail. Such width also increases the side motion of trucks and cars, with consequent injury to surface and line, to the cars themselves and to the riding of cars.

The wide gage permits of less spreading of track before it becomes dangerous. Reducing the factor of safety, if one may use the term.

When one car wheel is pressed close to one rail the other wheel on a wide gage track will be drawn so far in that its outer edge will run very near the middle of a wide-headed rail. The outer flange often found on wheels thus grinds severely on the rail and causes its rapid destruction.

Wide gage compels the use of unnecessary width of flange openings for frogs and guard rails. This extra width hastens greatly the destruction of frogs.

If all gages were the same, probably the Master Car Builders would feel encouraged to insist on greater exactness in the making and setting of car wheels.

Rough figuring from the Official Railway List, shows the mileage of the two gages in the United States and Canada to be:—

4 ft. 8½ in. 180,000 miles.
4 ft. 9 in. 25,000 miles.

Hence it is but a comparatively small mileage that must be changed to secure uniformity.

Two objections are made to narrowing the wide gage. It is claimed that on a crooked road the cars will pull harder if gage is narrowed; some experiments made on the Pennsylvania Railroad are said to prove this. Any one who, standing beside wide gage track on the inside of a curve, watches the wheels as a freight train passes, will find it difficult to believe that a reduction of one-half inch in clearance would prove disastrous. If the conclusion is correct, why do the wide gage people continue to use wide gage engines? An engine is the only track vehicle that requires any considerable clearance on curves, and yet is made on the wide gage railroads with the same clearance as on narrow gage railroads.

The other objection is cost. This would be trifling The gage need not be changed at once, nor need the work be done as a special job. As ties are put in and track regaged—as must be done any way—the change can be made with hardly noticeable trouble or expense. The engine wheels would also have to be changed; but this need only be done when the engines are shopped. Those on the road, always more or less worn, would run with little disadvantage until other work required their retirement.

It is hoped that the above brief notes may interest you or your correspondents to at least a discussion on this subject; and it is believed that the testimony of track men on the wide gage roads, would, if frankly given, convince their managers and presidents that they should conform themselves to the general practice.

STANDARD GAGE.

Education of Trainmen on First Aid to the Injured.

Cincinnati, New Orleans & Texas Pacific Railway.
Lexington, Ky., March 23, 1899.

To the Editor of the Railroad Gazette:

A brief description of the methods in vogue on this line in the education of the trainmen on the "First Aid to the Injured" may interest your readers. The necessity for such knowledge on the part of the train men, we assume, is admitted by every one connected with the operation of a railroad. Therefore, it will not be necessary to discuss this feature of the case.

The duties of trainmen on all railroads, especially those in the freight service, are, to say the least, hazardous. For this reason the management of this line has considered it advisable, not only in the best interests of the employees, but in the interest of humanity, to educate the trainmen in a general way as to the first aid to the injured. Train employees on all railroads are at times injured, perhaps at night, when immediate assistance cannot be procured, or at isolated points miles away from a surgeon, and it is in the effort to teach the men how to act, and to act promptly in such emergencies, that arrangements have been made with the railroad surgeons along the line of this road to deliver a course of lectures to the trainmen at stated intervals at various points on the road on "First Aid to the Injured," and in this way endeavor to impart sufficient knowledge to enable them to act intelligently (until the arrival of a surgeon) in cases of injuries that might otherwise result fatally by reason of hemorrhage.

Our men have become greatly interested in these lectures, and they do not hesitate to ask the surgeon to more thoroughly explain when they fail to comprehend. In addition to illustrating the lectures by the various charts, the surgeon has a subject before the class, generally a mulatto, nude, which enables the surgeon to more fully explain and the men to more readily understand. The surgeon applies bandages, the tourniquet, etc., to the subject in the presence of the men. Then the surgeon, in order to ascertain if the men fully appreciate the conditions and how to apply the bandages, etc., calls upon the men to personally apply them to the subject, and in this way the men become, in a measure, expert in the application of bandages, etc.

At the different terminals, at the freight yards and in the tool, or what is known as the "wrecking car," ambulance chests are kept fully equipped with muslin bandages, cotton (absorbent and carbonated), adhesive plaster, sponges, vaseline, tourniquet, scissors and all the other necessaries for a complete emergency outfit, so that they can be readily resorted to in case of need.

With each chest are the following printed instructions, signed by the Chief Surgeon:

> Arrest bleeding from wounds by pressure with a sponge moistened with cold or very hot water; if the loss of blood is considerable, apply the tourniquet. The pad of the latter must be applied to the inner side of the arm below the shoulder, in injuries of the arm; to the front surface of the thigh, below the groin, in those of the leg.
>
> In small, clean-cut wounds, bring the edges together with strips of adhesive plaster; in wounds more than an inch in length, unite the edges with stitches.
>
> If the wound is ragged and torn, clean it as thoroughly as possible, then cover it with vaseline and a thick layer of cotton. Fix this dressing by applying a bandage as even as possible, and with moderate firmness.
>
> When a limb is evidently broken, place it in as natural a position as possible until the local surgeon of the company can see the patient.

The present plan is to also equip all freight cabooses with small ambulance chests, so that in cases of employees injured when medical aid cannot be promptly had, the men will have at hand what is necessary in the emergency, as a temporary measure and are enabled to act understandingly as the result of the knowledge gained from the lectures.

Without going further into details, the above will give a general idea of the method. It is not the intention to make surgeons of the train employees, but it is the desire of the management to have imparted to them sufficient knowledge to enable them to act promptly and effectively in cases of injury when a surgeon is not at hand. W. J. MURPHY.

The Standard Code on the Delaware & Hudson.

A revised code of rules for the transportation department of the Delaware & Hudson Canal Company's railroads was put in effect on March 12. The only officer's name shown in the book is that of H. G. Young, Second Vice-President. In general the code is made up on the plan adopted by the Committee of the American Railway Association in its report, which was discussed at the last meeting of the association (which report, however, has not been finally adopted), but the compiler of the Delaware & Hudson code has made numerous changes to fit the conditions of his own road, and he has taken no pains to make the numbers of his rules correspond to those attached to the same rules in the committee's report. We note the principal variations from the Standard Code which are observable in a hasty reading.

General regulation A does not require employees to supply themselves with copies of the rules; heads of departments must see that the men have copies. General regulation C is omitted. Among the general regulations not found in the Standard Code is one requiring employees to pay all honorable debts which they contract while in the service of the company.

Watch certificates must be renewed July 1 and Dec. 15. Each conductor and engineman, when possible, must daily regulate his watch by a designated standard clock. Before starting from an initial station the conductor and engineman of each train must compare watches with each other and, if watches do not agree, refer to the Train Dispatcher by wire for standard time. There is no requirement for a daily register of the regulation of watches. For the time-table rule, No. 4 B is adopted.

In the definitions of visible signals, which, in this code, constitute Rule No. 13, red means stop, green proceed, red and green, caution. White appears to have no meaning, except on the front of an engine to indicate an extra train. A red and blue flag by day and a red and a blue light by night are the car repairers' signals. The whistle signals to call in flagmen are the same as in the Standard Code heretofore in use; that is to say, four long and one short for east and north. With air-whistle signals, one sound indicates "train may have parted or signal may be out of order." Four sounds, when train is standing, means apply or release air brake. The caboose, or last car of a freight train, except locals, must be connected with the engine gong by cord properly drawn over the train. On the Susquehanna and Saratoga divisions this rule applies only at night.

A train having fallen back into the time of another of the same class, the schedule of which is not faster than its own, may proceed, etc. A second-class train must not start from an initial station without orders from the Superintendent. Trains, except first-class trains, must come to a stop at the yard limit where yard limits are prescribed.

The flagging rule, which is No. 60, says that "a" flagman must go back immediately with "stop" signals, etc. It says that the front of the train must be protected, but does not say by whom. Except in these particulars the rule is like that reported by the committee. A clause is added, to the effect that torpedoes must not be placed near stations or road crossings.

"When practicable" each train order must be given in the same words to all persons, etc. Extra trains will be designated in train orders by the conductor's name. Enginemen, as well as conductors, sign for "31" orders. Form 19 for train orders is not mentioned. Only one engineman of a train will sign orders, but the runner of a helping engine must have a copy of all orders. Rules 81 and 82 read:

When trains running in contrary directions are to be moved toward each other by special order, the superior train shall first receive the order and the "complete" before an order shall be given to move the inferior train. An order must not be given to an inferior train or section to run against a superior train or section until all subsequent sections of the superior train have been held.

When an order is to be addressed to an operator to hold a train, the dispatcher will say "31 red"; the operator will display signal and reply, "Red displayed." This rule appears not to apply to anything but holding orders, addressed to the operator. This would seem to indicate that holding orders are commonly sent as a preliminary to meeting orders; but in the note under the form given for a holding order it is said that they will only be used in special cases.

The D. & H. code omits the rule referring to train order signals, except as seen in the paragraphs just noted. It also omits the list of signs and abbreviations.

The forms of train orders are numbered, not lettered, and vary considerably from the forms reported by the committee. When a train is held at a station by a holding order it must not pass that station until it receives a 31 order, to which is added the word "proceed."

The rules for moving trains by telegraphic orders are followed by very short chapters for each class of employees, including trainmasters, engine dispatchers and road foremen of engines. Persons under the age of 16 must not be employed as brakemen or yard switchmen on the Northern Railroad Department, and none under 21 must be employed for

these duties on the Pennsylvania Division. Yardmasters must see that air brake cars are placed first in the train, except oil tanks and cars loaded with explosive or inflammable material. Conductors must communicate all train orders to trainmen, and enginemen must communicate them to firemen. When the last car in a passenger train is a private car the conductor should station the tail end man in the car next ahead of the private car. Passenger trainmen "should make frequent trips through the coaches for the purpose of determining whether or not they can be of service to passengers or in any way minister to their comfort."

A man flagging a train must spread the flag and must also wave it across the track; he should never flag a train at night with a red and [a] white light in the same hand. Engines on freight trains must always be detached before taking water.

The line from Albany to Saratoga is equipped with automatic block signals and there are three pages of rules concerning these. This chapter is preceded by six of the block signaling definitions of the Standard Code. A special chapter in the book gives a list of the articles to be carried in each freight caboose, in which there are no less than 41 items. A caboose inspector examines each caboose monthly.

The Chicago Elevated Loop.

By Henry M. Sperry.

III.

Interlocking, Continued.

The normal movements for Metropolitan inbound trains (see Fig. 7), are from E to F by signals 1 and 25, and for Metropolitan out-bound trains C to D signal 29; Lake St. trains A to B signal 30 and for South Side trains C to F signal 28. All other movements are classed as emergency movements and are made only when there is a blockade on the Loop, due to a fire or other causes blocking the tracks, or when it may be necessary to renew frogs or switches. Cross-overs 6 and 7 are solely for emergency movements and have been used but little. If an emergency arises Metropolitan trains can be turned very quickly at this junction by making a "Y" movement via E F, F C and C D. This movement turns the train so that the motor is on the right end for it to proceed.

When emergency movements are necessary, requiring trains to be handled in the direction opposite to the normal current of traffic, all train movements are made by train order, this order being of the following form:

Superintendent's Office, Feb. ——— 99
Train Order No. ———
To All Met. Trains. Diamond No. 5.
Use Outer Loop Track from Adams and Fifth Avenue Cross-Over to Sherman and Van Buren Street. Then proceed West to Franklin Street Station.
S. S. NEFF, Superintendent.
Complete.....Opr's. Sig.....

In designing the signaling of the two junctions, it was necessary to determine the time that would be consumed by each movement in order that nothing should be overlooked that would tend to facilitate the handling of the traffic. A diagram of Metropolitan Junction was prepared and the time for each movement carefully figured in seconds. A graphic timetable in seconds was also prepared, showing the entire loop and movements of trains for each road with length of station stops, which varies from 8 to 15 seconds; speed between stations, etc. From this data the conclusion was reached that in order to operate the loop to its maximum capacity, the time required for one train to complete the circuit of the loop must be an exact multiple of the interval between trains; that the in and out bound movements at Metropolitan Junction and South Side Junction must be made at the same time, as a train entering or leaving the loop would block the outer track the time required to make the move, and that if the in and out bound movements could be made simultaneously, the time would be no longer than if but one movement was being made. It is possible to accomplish this by making the in-bound movement dependent upon the out-bound movements, and the slight delay to a train entering is more than balanced by the saving in delay to all other trains. From results of actual operation, this data was found to be conservative and the time around the loop has been cut down from 20 minutes to 18, then to 16, and is now 14 minutes. During the rush hours Metropolitan trains enter the loop at 1½ minute intervals, South Side and Lake Street at 2. The time consumed in handling trains at Metropolitan Junction is as follows, for four car trains:

Lake Street, "A" to "B," including time for train to pass its own length and so clear the Junction ..... Speed, 10 miles per hour.	25 seconds.
South Side trains "C" to "F"..... Speed, 10 miles per hour.	25 "
Metropolitan in-bound trains "E" to "F" .... Speed, 16 miles per hour.	17 "
Metropolitan out-bound trains "C" to "D"... Speed, 12 miles per hour.	17 "

From record for Aug. 16th, 1898, during 14 minutes interval from 5.30 to 5.44 p. m., show the following movements:

Metropolitan .....16 trains	64 cars.	
South Side ..... 6 "	18 "	
Lake Street ..... 6 "	18 "	
28 "	100 "	

This required 192 lever strokes.

During the hour, same day, 5.30 to 6.30 p. m., 114 trains or 397 cars were moved, requiring 739 lever strokes. This is nearly two trains per minute, an average of about one lever stroke every five seconds. Time required to make the change from one movement to another movement is 3½ seconds, in which twelve levers are moved, and it is a most interesting and novel sight to watch the signalmen move the levers at this rate of speed. In order to facilitate the movement of the levers a diagram was prepared on which was plotted the lever numbers and the order in which they should be manipulated and an arrangement of levers decided upon that required the least amount of work to operate, the principle corresponding in a measure to that employed in making the key-board of a typewriter, in which the letters that are most frequently used are placed nearest to the hand of the operator. A decided improvement on the older method, in which the only consideration in arranging the levers was to facilitate the placing of the connections for them.

The traffic of the Union Loop is handled as follows: The Metropolitan and South Side trains use the inner track, moving north on Wabash avenue, west on Lake street, south on Fifth avenue and east on Van Buren street, the Metropolitan entering and leaving the loop at Metropolitan Junction and the South Side at South Side Junction. The Lake street trains and the Northwestern (when completed) use the outer track and in direction opposite to that of Metropolitan and South Side. Lake street enters and leaves at Fifth avenue and Lake street, as will also the Northwestern.

The Lake street road was the first to operate on the Union Loop, using the Lake street side as far as State street, in September, 1895; to Adams street Nov. 8th, 1896, and around the Loop Oct. 4th, 1897;

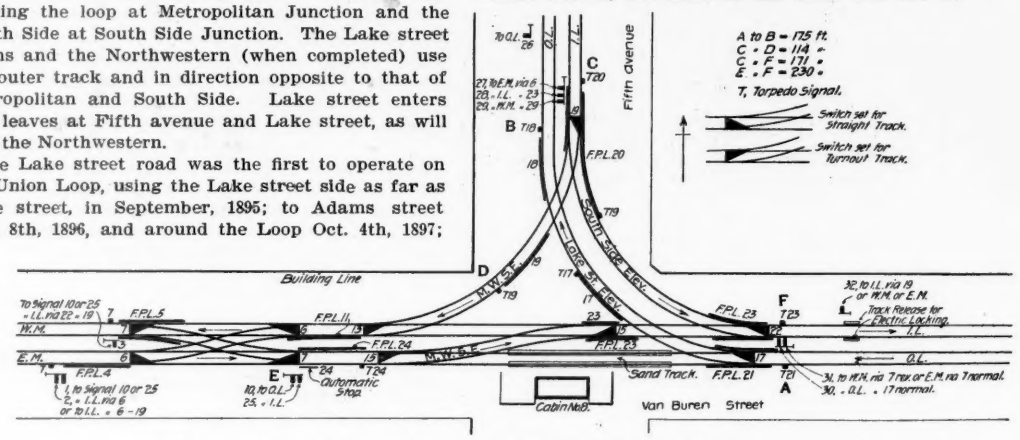


Fig. 7.—Metropolitan Junction—Union Elevated Railroad, Chicago.

References.—*O L, Outer Loop Track; I L Inner Loop Track; M W S E. Metropolitan West Side Elevated Railroad; W M, Westbound Metropolitan Track; E M, Eastbound Metropolitan Track; F P L, Facing Point Lock.*

followed by the Metropolitan Oct. 11th, 1897, and by the South Side Oct. 18th, 1897.

At present the traffic is asfollows:

	Trains per day.	Cars.
Lake Street	202	556
Metropolitan	697	1,790
South Side	255	890
	1,154	3,236

As an evidence of the satisfactory manner in which this large traffic is handled, the record for August, 1898, which is not exceptional, shows that 31,650 trains, or 84,284 cars, passed around the Loop. Of this number but thirty trains were delayed, amounting to 128 minutes, or 4.26 minutes per train. If, however, this delay is spread out over all trains, it is but .24 seconds per train, a space of time so small that it would pass unnoticed by the traveling public.

Fig. 3, published with our first article, gives a diagram of the loop, showing stations, junctions and diamond, or emergency cross-overs, and the position of trains under normal condition of traffic from a record made Aug. 10th, 1898, at 7.45 a. m. (the morning rush hour.) At that hour there were twenty trains, as follows:

Lake Street .....Trains	6	Cars 24
Metropolitan ..... "	8	" 32
South Side ..... "	6	" 24
	20	80

It will be seen from this that the Loop possesses ample capacity for largely increased traffic, and the record of Oct. 19th, 1898, showing the traffic thrown upon the elevated by road by the blocking of the streets by the Peace Jubilee procession, is an indication of what can be done. It is estimated that 367,399 people were handled on that day by the three elevated railroads, or over one-half the number of people that viewed the procession. Passengers were conveyed without an accident and the delays were simply those incident to handling such a large number of people at the stations.

Maximum Capacity.

The real test of the efficiency of the Union Loop as a terminal is its probable maximum capacity for handling traffic, and from the experience gathered from its operation the following has been deduced:

If the Loop was a single track and used by but one road, there being no junctions or crossings, its capacity would simply be limited by the number of trains that could be run around it after making due allowance for a safe interval between them; but as the Union Loop is a double line, with two junctions, used by three different railroads, and to be used by four, with three junctions, the problem is an entirely different one, and we are forced to measure the capacity of the Loop by the number of trains that can be passed through the junction points. The arrangement of the stations is such that in order to unload and load trains in the shortest possible space of time, these trains should not exceed three cars in length, and as this consideration must not be lost sight of, the capacity of the junctions should be estimated on this basis. A three-car train can make the in-bound movement at either Metropolitan or South Side Junction, moving at the rate of sixteen miles an hour, in 20 seconds, and can make the out-bound movement at twelve miles an hour in the same time. And as it will be necessary to make the in and out bound movements simultaneously, only 20 seconds will be necessary for this double movement. This covers, not only the time for the train to clear the junction, but also a sufficient margin for the signal man to change the route and signals for the next movement.

Two three-car trains, that is the Lake street and Northwestern, can pass through either of the junctions on the outer track, moving at a speed of ten miles an hour, in 40 seconds, and while this move is being made, its corresponding movement can be made on the inner track.

On a basis of one minute interval for trains, sixty double movements in and out can be made at both Metropolitan and South Side junctions in 20 seconds each, or 20 minutes; and sixty triple movements, that is, one train on the inner and two on the outer Loop tracks can be made in 40 seconds each, or 40 minutes; making a total movement of sixty trains for each of the four roads in one hour. And assuming that these trains will make the complete circuit in 14 minutes each, there will be on the Loop at one time fourteen trains of each road, twenty-eight on the inner track and twenty-eight on the outer; and with eleven double stations as at present, there will be twenty-two trains on each track at stations and six between stations, thirty-five per cent. of the space on each track will be occupied; that is, there will be, provided all trains are equally spaced, two train lengths between each train and the one preceding it. As these figures represent a traffic largely in excess of present conditions, it is fair to assume that it will be many years before the Loop is taxed to its utmost capacity.

The satisfactory working of the Loop, its freedom from the delays and accidents incident to surface traffic in the crowded streets of a busy city emphasizes the fact that an elevated road is the ideal means of intramural rapid transit. The master-mind who made this ideal a possibility was Mr. Charles T. Yerkes, and the men who carried the work to a successful completion are Messrs. D. H. Louderback, President of the Lake Street Elevated; Dickinson McAllister, President of the Metropolitan West Side Elevated, and Leslie Carter, President of the South Side Elevated, forming the first Board of Managers of the Union Loop.

The construction was managed by Mr. J. A. L. Waddel, consulting engineer, and Mr. Charles V. Weston, chief engineer. The rigidity of the structure, freedom from vibration and the completeness of all details show that their work was well done.

The operation of the road in the hands of Superintendent Stewart S. Neff shows what can be accomplished by a thorough organization and unceasing vigilance. The smoothness of the working has been such that many believe that "the Loop runs itself."

Schenectady Moguls for the Southern Pacific.

The engraving herewith, from a photograph, shows a mogul locomotive recently built by the Schenectady Locomotive Works for the Southern Pacific Company. This is one of a lot of 12 of the same weights and dimensions. The descriptive specification follows:

Gage	4 ft. 8½ in.
Fuel	Bituminous coal
Weight in working order	142,600 lbs.
" on drivers	123,700 lbs.
Wheel base, driving	15 ft. 2 in.
" " rigid	15 ft. 2 in.
" " total	23 ft. 3 in.
Cylinders.	
Diameter of cylinders	20 in.
Stroke of piston	28 in.
Horizontal thickness of piston	5¼ in.

Diameter of piston rod .....3½ in.
Kind of piston packing.....Cast iron rings
" " " rod packing .....Jerome
Size of steam ports.....18 in. x 13/4 in.
" " exhaust " ....18 in. x 3 in.
" " Bridges ....1⅜ in.

Valves.

Kind of slide valves .....Allen American
Greatest travel of slide valves.....6 in.
Outside lap " " " .....1 in.
Inside " " " " .... ⅜ in.
Lead of valves in full gear.....Line and line
Kind of valve stem packing.....Jerome

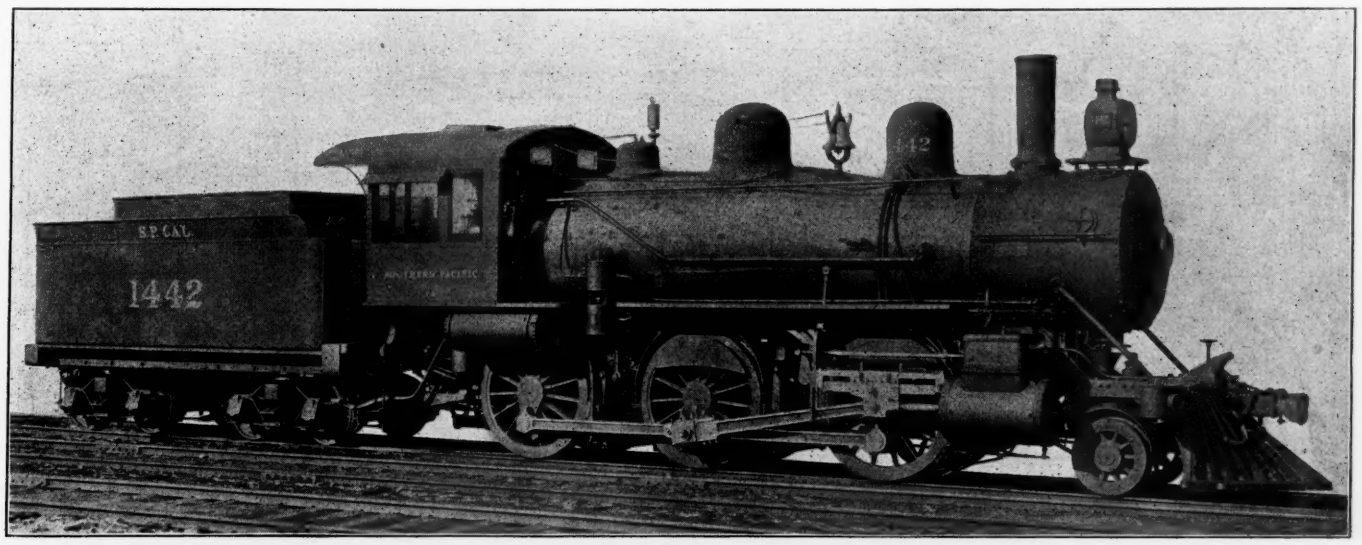
Wheels, etc.

Diameter of driving wheels outside of tire.....63 in.
Material " " " centers .....Cast steel
Tire held by .....Shrinkage
Driving box material .....Cast steel

Total wheel base of engine and tender.....46 ft. 8½ in.
2-3 in. consolidated encased safety valves.
Westinghouse-American combined brakes on all drivers, tender and for train.
Cab of steel and iron.
Sweeney brake attachment.
Le Chatelier water brake on cylinders.
California couplers.

The Radford Cut-Off on the Norfolk & Western.

The Norfolk & Western Railway has put under contract a low-grade line near Radford, Va., the object of which is to save some distance, and particularly to save heavy grades and curves for coal and freight passing over the main



Mogul Locomotive for the Southern Pacific Railway.

Diameter and length of driving journals..9 in dia. x 12 in.
" " " " main crank pin journals, 6 in. dia. x 6 in.
" " " " side rod " " journals, main side 5¼ in. x 6½ in., 5 in. dia. x 3¾ in.
Engine truck, kind.....2 wheel swing bolster
" " journals ..... 6 in. dia. x 10 in.
Diameter of engine truck wheels.....30 in.
Kind " " " " .
Krupp No. 3 steel tired c. i. spoke cen. with ret. rings, tire 3⅛ in. x 5½ in.

Boiler.

Style .....Extended wagon top
Outside diameter of first ring.....62 in.
Working pressure .....190 lbs.
Material of barrel and outside of fire box...Carbon steel
Thickness of plates in barrel and outside of fire box, 5/16, ½, 9/16, 11/16 in.
Horizontal seams, butt joint sextuple riveted with welt strips inside and outside.
Circumferential seams.....Double riveted
Fire box, length.....108⅛ in.
" " width .....40¼ in.
" " depth .....F., 73 in.; B., 59½ in.
" " material .....Carbon steel
" " plates, thickness, sides, ⅜ in.; back, ⅜ in.; crown, ⅜ in.; tube sheet, ½ in.
" " water space, Front, 4 in.; sides, 3½ in.; back, 3½ in.
" " crown staying .....Radial, 1 in. diam.
" " stay bolts .....⅞ in. and 1 in. diam.
Tubes, material.....Charcoal iron, No. 12 B. W. G.
" number of 312
" diameter ....2 in.
" length over tube sheets.....12 ft.
Fire brick, supported on.....Studs
Heating surface, tubes.....1946.7 sq. ft.
" " fire box .....168.0 sq. ft.
" " total ..... 2,114.7 sq. ft.
Grate " ....30.22 sq. ft.
" style ....Rocking, with drop plates
Ash pan, "
Hopper operated by air with dampers front and back
Exhaust pipes .....Single
" nozzles ..... 4¾-5 in. to 5¼ in. dia.

Smoke stack, inside diameter, 16 in. at top, 14 in. near bottom
" " top above rail.....14 ft. 11¼ in.
Boiler supplied by Two injectors, W. & Co. Monitor No. 9 R. & L.

Tender.

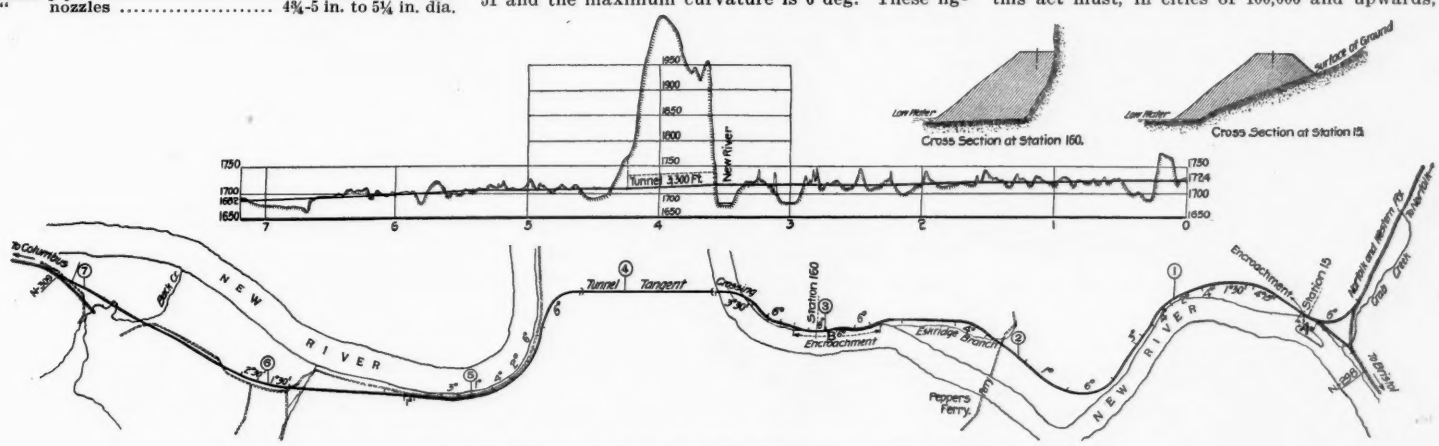
Weight, empty .....39,650 lbs.
Wheels, number of.....8
" diameter ..... 33 in.
Journals " and length.... .....5 in. dia. x 9 in.
Wheel base .....15 ft.
Tender frame .....10 in. channel iron
" trucks,
4 whl. channel iron, cen. bearing F. & B. side bearings on back truck.
Water capacity .....4,500 U. S. gallons
Coal " ....10 tons

east and west line. This work has been let to Messrs. Walton, Luck & Co., of Falls Mill, Va., work to be begun immediately and finished within a year.

The new line leaves the old main line near Back Creek, north of Radford, and joins the main line again near Crab Creek, east of Radford. It follows pretty closely the valley of New River except where a big bend is cut off by a tunnel. The plan and profile given herewith show very well the alignment and grades of the cut-off. It dose not seem important to show the old line, which goes nearly due south from Back Creek to Radford and then east and north from Radford to Crab Creek. It must be kept in mind that the old line is not to be abandoned, the cut-off being built merely for economy in handling heavy traffic.

The length of the present line between the points of junction with the low-grade line is 11.5 miles. The maximum grades are 78 ft. per mile eastbound and 86 ft. per mile westbound. The sums of ascending grades are 287 ft. eastbound and 243 ft. westbound. The total tangent is 42 per cent. of the line and the maximum curvature is 14 degrees. On the other hand, the low grade line between the same points is 7.2 miles, the maximum eastbound grade is 11 ft. per mile and there is no opposing grade westbound. The sum of ascending grades eastbound is 42 ft. The percentage of tangent is 51 and the maximum curvature is 6 deg. These figures show immediately to the engineer and operating officer the meaning of the new line and do not need to be enlarged upon.

The tunnel is, it will be seen, 3,300 ft. long, besides the approach cuts. This is, however, subject to some change. Just east of the tunnel the line crosses New River on a bridge of six spans. These spans are through, riveted trusses, and are all on a considerable skew, the river being crossed at an angle and the piers being built parallel with the axis of the river. The center line of the track on the bridge is on a curve of 3° 30′. The extreme end panels of the first and sixth spans are square, the abutments being at right angles to the axis of the bridge. The spans vary in length from 137 ft. 10 in. to 141 ft. 2½ in. as measured on the center line of track. The piers and abutments are all of masonry, and evidently, from the section that we have seen, will be on rock close to the surface of the ground. The contract for this bridge has been let to the Edge Moor Bridge Works.



New Low Grade Line of the Norfolk & Western, near Radford, Va.

Railroad Legislation in Indiana.

The Legislature of Indiana, recently adjourned, passed seven laws affecting railroads or street railroads. House Act No. 162 provides that a person holding a judgment against a railroad which is unpaid for one year, exclusive of time lost by appeals, etc., may have any agent, conductor, etc., examined as to the amount of the company's money that is in his hands; and the court may order not more than half such money to be applied to the settlement of the judgment. The liens of laborers and certain claims of employees and material men are excepted from this act.

House Bill No. 309 provides that the use by the public of a right of way over railroad lands shall not ripen into a right to continue such use, even though the privilege has been enjoyed for 20 years.

H. B. No. 337 amends the law concerning private wagon roads across tracks. A land owner may construct and maintain a wagon road across railroad rights of way, to reach other parts of his land or to reach a highway, and may make embankments or excavations where necessary, and may bridge gutters, but not to obstruct the flow of water therein.

House Act No. 74 forbids the construction of a railroad on land used or occupied as a cemetery.

H. B. No. 60 requires street cars to be comfortably heated during November, and the four following months; fine for violation, $25 to $100 for each day.

H. B. No. 408 amends the law providing for incorporation of street railroad companies (Section 4,147 R. S. 1881). Street railroad companies organized under this act must, in cities of 100,000 and upwards, permit the use of their tracks by suburban passenger railroads from the city line to some central point in the city; the city government to name the central point and grant right of way for a loop on which to turn cars. If the two companies cannot agree as to compensation, the question is to be settled by the Circuit Court of the county, but no appeal shall stay the use of the tracks. If the city company cannot furnish power for the suburban cars, the suburban company may put wires on the poles of the city company.

S. 456 is a law to facilitate consolidation of street

railroads which have connecting and continuous lines. One section of this bill authorizes consolidation with companies beyond the state line.

Locomotive Spring Rigging.

At the February meeting of the New England Railroad Club, Mr. L. R. Pomeroy, of the Cambria Steel Co., presented a carefully prepared paper on "Locomotive Spring Rigging," having more direct reference to the underhung forms. The history of the American method of distributing the weight of the locomotive among the several wheels by equalizing levers, was first given and illustrated by some of the most notable examples of early practice. However, the discussion of some modern forms of spring rigging is possibly of greater interest at this time as two serious faults in design were pointed out. In this connection it was said: "A substantial improvement has been made by placing the fire box on top of the frames, which made the limiting widths the space between the wheels, instead of between the frames, gaining thereby nearly, if not quite, eight inches in width. Designers were then forced to employ underhung spring rigging, and so far as such designs have followed the general principles involved in the best arrangements of overhung springs, there has been no more trouble with underhung than with overhung rigging. The popular and successful type of overhung spring rigging has been the result of a long process of evolution and experience, and it would seem to be good practice to utilize this experience, so far as the new conditions permit, and the only arrangements of springs that have been unsatisfactory have been those in which a departure has been made from long-established and successful precedents.

"The difficulty is twofold: First, where driving springs have been so connected as to provide sliding (and chafing) contact at their ends. Hangers or swinging links are provided almost universally as a means of spring suspension in foreign practice, and this principle is commonly employed in engine trucks in preference to permitting the springs to bear at their ends. Recent experience with springs having sliding contacts goes to show that the destruction of the spring is very rapid, and the use of links has demonstrated, in a practical way, that springs fitted with them do not receive the punishment to which the others are subjected.

"Second, such an arrangement of springs and equalizers, with reference to their points of suspension, as will cause the hangers connecting the equalizers with springs to pull away from the vertical plane. Such arrangements cause rapid wear and unsatisfactory movements because strains are produced for which no provision has been made.

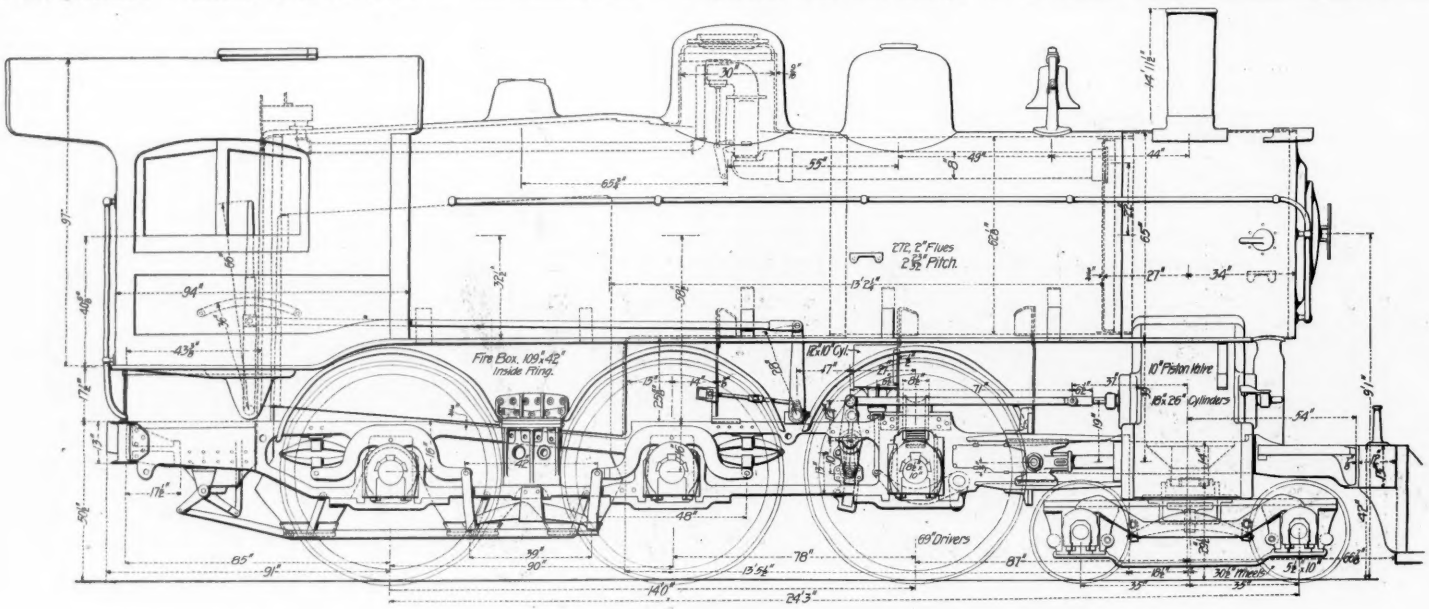
"It is unnecessary to dwell upon the effects of these faults, it being sufficient to call attention to the fact that good designing demands the relief of heavy-loaded springs of this type from sliding friction at their ends, and they should also be relieved of the stresses imposed by hangers which pull out of the vertical to an unnecessary extent.

"There is little or no excuse for the failures that have recently been made, when these principles have been neglected, because this ground has all been gone over thoroughly by others, whose experience has been available to all."

Examples of good and bad practice in underhung spring rigging were given, and it was also suggested that these principles be applied to the spring rigging of certain forms of tender trucks provided with half-elliptic springs, upon which the tender frame rests, the ends having a bearing on the truck frames over the wheels. In support of this view the common practice of providing suspension links at the ends of similar springs in locomotive trucks was cited. If it is worth while to guard against the end wear of locomotive truck springs by abrasion, it was considered equally important to take similar precautions to increase the life of springs used with tender trucks.

Ten-Wheel Passenger Locomotive for the B. R. & P. R. R.

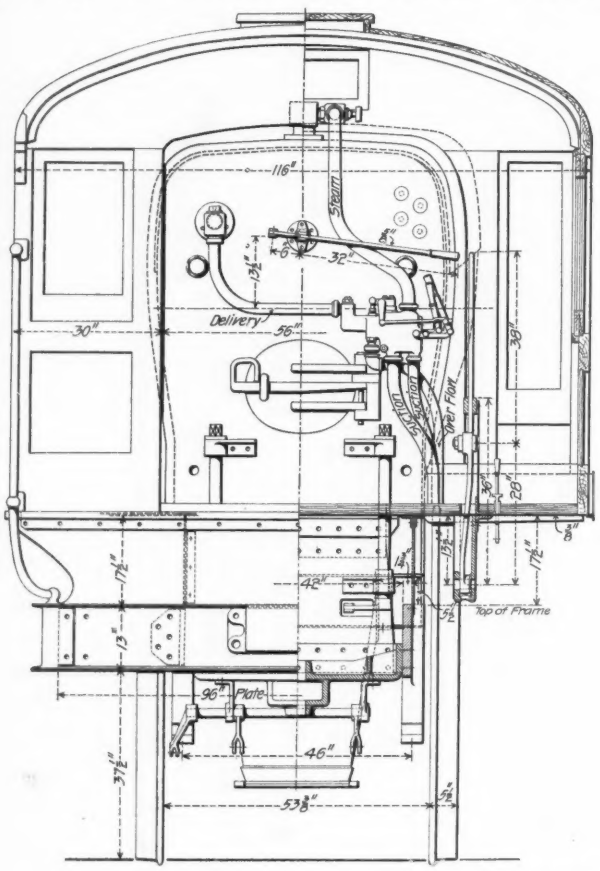
The accompanying photograph and line drawings show an 18 in. x 26 in. 10-wheel passenger locomotive recently built by the Brooks Locomotive Works for the Buffalo, Rochester & Pittsburgh Railroad, five of which were delivered in December last. One of the special features of these engines is the improved piston valve. The outline specifications are as follows:

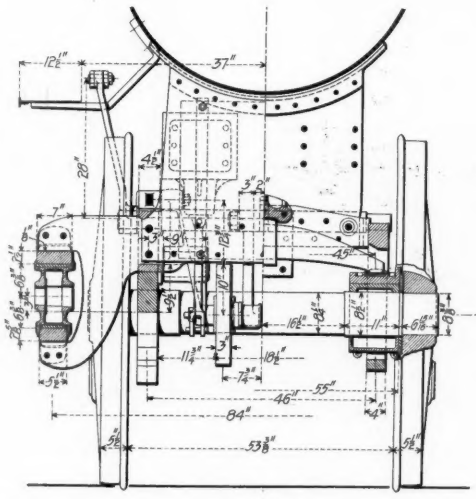


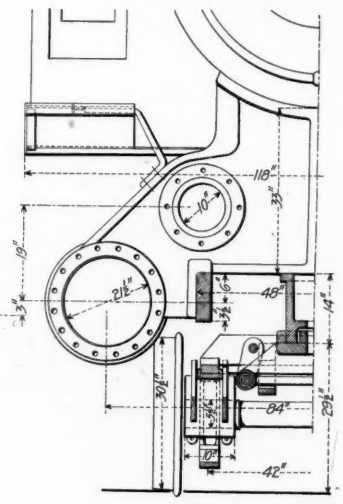
Ten-Wheel Passenger Locomotive for the Buffalo, Rochester & Pittsburgh Railway.

MR. C. E. TURNER, *Supt. Motive Power.* BROOKS LOCOMOTIVE WORKS, *Builders.*

Gage	4 ft. 8½ in.
Kind of fuel to be used	Bituminous
Weight on drivers	108,000 lbs.
" " trucks	34,000 lbs.
" total	142,000 lbs.
" tender, loaded	98,000 lbs.
Wheel base, total, of engine	24 ft. 3 in.
" " driving	14 ft.
" " total, engine and tender	51 ft., 10¾ in.
Length over all, engine	37 ft. 2⅜ in.
" " " total, engine and tender	61 ft. 5⅜ in.
Height, center of boiler above rails	9 ft. 1 in.
" of stack above rails	14 ft. 11½ in.
Heating surface, fire box	166 sq. ft.
" " tubes	1,862 sq. ft.
" " total	2,028 sq. ft.
Grate area	30.6 sq. ft.
Drivers, diameter	69 in.
" material of centers	Cast steel
Truck wheels, diameter	30½ in.
Journals, driving axle	8½ in. x 10 in.
" truck	5½ in. x 10 in.
Main crank pin, size	6 in. x 5½ in.
Cylinders, diameter	18 in.
Piston, stroke	26 in.
Piston rod, diameter	3½ in.
Kind of piston rod packing	United States
Main rod, length center to center	116 in.
Steam ports, length	21 in.
" " width	2 in.
Exhaust ports, least area	50 sq. in.
Bridge, width	3¼ in.
Valves, kind of	Improved piston
" greatest travel	7 in.
" steam lap (inside)	1⅛ in.
" exhaust lap or clearance (outside)	⅛ in.
Load in full gear	⅛ in. negative
" constant or variable	variable
Boiler, type of	Player Improved Belpaire
" working steam pressure	200 lbs.
" material in barrel	Steel
" thickness of material in barrel	⅝ in.
" " " tube sheet	¾ in.
" diameter of barrel	62 in.
Seams, kind of horizontal	Quintuple
" " " circumferential	Double and triple
Crown sheet, stayed with	Direct stays
Dome, diameter	30 in.
Fire box, type	Long, Over Frames
" " length	108 in.
" " width	42 in.







Sections of Buffalo, Rochester & Pittsburgh Ten-Wheeler.

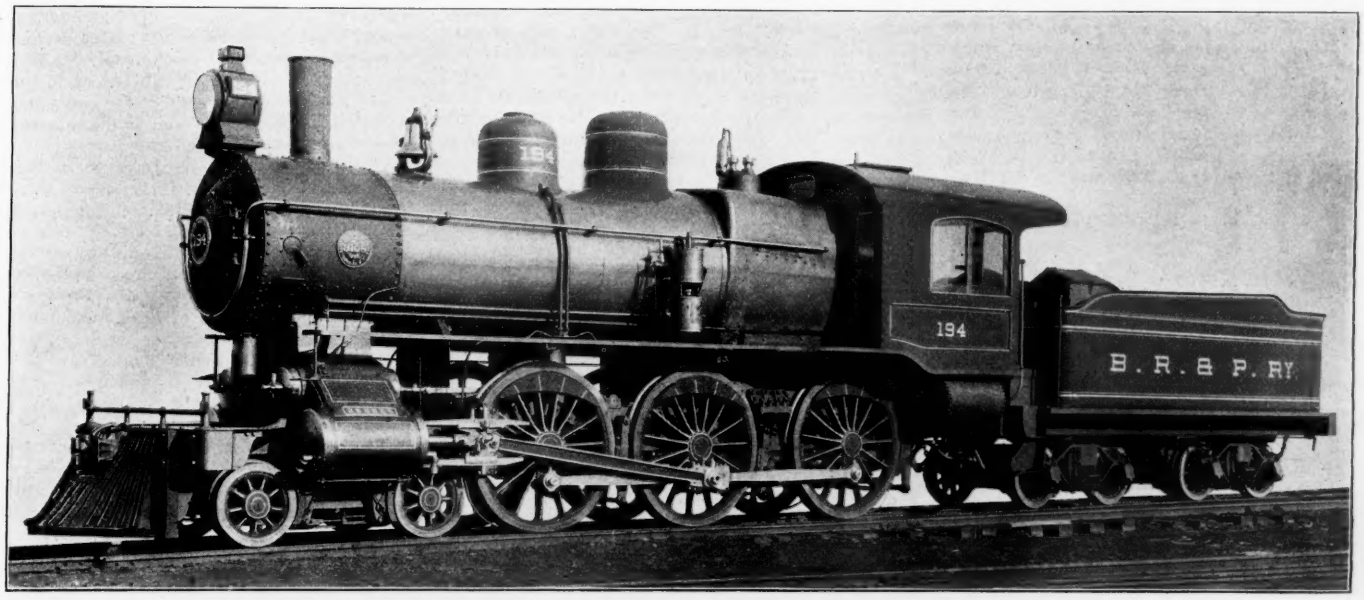
Fire box, depth, front	75 in.
" " " back	60 in.
" " material	Steel
" " thickness of sheets: Crown, ⅜ in.; tube, ⅝ in.; side and back, ⅜ in.	
" " brick arch	On studs
" " mud ring, width: Back, 3½ in.; sides, 3½ in.; front, 4 in.	
" " water space at top: Back, 4½ in.; sides, 6 in.; front, 4 in.	
Grates, kind of	Cast iron rocking
Tubes, number of	272
Tubes, material	Charcoal iron.
" outside diameter	2 in.
" thickness	No. 12 B. W. G.
" length over tube sheets	13 ft. 2¼ in.
Smoke box, diameter, outside	65 in.
" " length from flue sheet	61 in.
Exhaust nozzle, single or double	Single
" " variable or permanent	Permanent
" " diameter	4½ in.; 4¾ in.; 5 in.
" " distance of tip above center of boiler, 3 in.	
Netting, wire or plate	Wire
" size of mesh or perforation	2½ x 2½ and 2¼ x 1¼
Stack, straight or taper	Steel taper
" least diameter	14¼ in.
" greatest diameter	15¾ in.
" height above smoke box	38 in.

Tender.

Type	8-wheel, steel frame
Tank, type	"U" shape
" capacity for water	4,500 gals.
" " coal	10 tons
" material	Steel
" thickness of sheets	5/16 in. and ¼ in.
Type of under frame	Steel channel
" " springs	Double elliptic
Diameter of wheels	33½ in.
" and length of journals	4¼ in. x 8 in.
Distance between centers of journals	6 ft 3 in.
Diameter of wheel fit on axle	5⅜ in.
" " center of axle	4¾ in.
Length of tender over bumper beams	22 ft. 1½ in.
" " tank	19 ft. 6 in.
Width " "	9 ft. 10 in.
Height " " not including collar	46 in.
Type of draw gear	M. C. B. Trojan

Special Fittings.

Brakes, B. L. W. outside equalized for drivers and engine truck. Westinghouse automatic for tender and train service.	
Pump	9½ in.
Sight feed lubricators	Michigan
Safety valves	Kunkle
Injectors	Hancock composite
Springs	French
Metallic packing	United States
Spark arrester	Bell



Ten-Wheel Passenger Locomotive for the Buffalo, Rochester, & Pittsburgh Railway.

The car was built by the Baldwin Locomotive Works, and the general dimensions are as follows:

Length of car body over end-sills	55 ft.
Length of passenger compartment	30 ft. 5½ in.
Length of baggage compartment	10 ft.
Length of motor compartment	14 ft. 6½ in.

The seating capacity of the passenger compartment is 40. The frame of the car is composed of steel channel and wooden sills. The total wheel base is 48 ft. 6 in. Weight of passenger end, 37,000 lbs. Weight of motor end, 79,000 lbs. The rear truck is four-wheeled, and under the motor end there are two pairs of drivers and a pony truck.

The engine is of the Baldwin compound type, with cylinders 9½ in. diameter, high pressure and 16 in. low pressure, with 18 in. stroke. The valve gear is the Stephenson link. The eccentric rods are upright.

Driving wheels, 44 in. in diameter, and driving wheel base, 7 ft. 8 in.

The boiler is of the vertical, submerged-flue type, with a self-feeding magazine. The magazine surrounds the smoke stack at the top. The boiler is 60 in. in diameter, and has 380 tubes, 1½ in. in diameter and 40 in. long. The firebox is 54 in. in diameter by 30 in. high, and has a heating surface of 860 sq. ft. Steam pressure, 185 lbs. Fuel, anthracite or bituminous coal.

On the roof of the car is a condenser composed of brass tubes 1½ in. in diameter. This has a total condensing surface of 1,500 sq. ft., and is so arranged as to condense the air pump or engine exhaust, or both, if desired. The water of condensation passes to the feed water tanks, two of which are provided, each having a capacity of 500 gallons. These are fixed underneath the car. The coal magazine will carry 2,500 lbs. of coal.

A doorway is provided between the passenger and baggage compartments, and one between the baggage compartment and the engine room. The car is provided with standard, passenger-car draft gear of the Janney-Buhoup type.

Steam-Motor Passenger Car—Pittsburg, Cincinnati, Chicago & St. Louis Ry.

Steam Motor Car on the P., C., C. & St. L.

The Pittsburgh, Cincinnati, Chicago & St. Louis has put in use on its lines in Ohio a combined passenger car and steam locomotive lately built for the company. An engraving of the car, made from a photograph, is shown herewith.

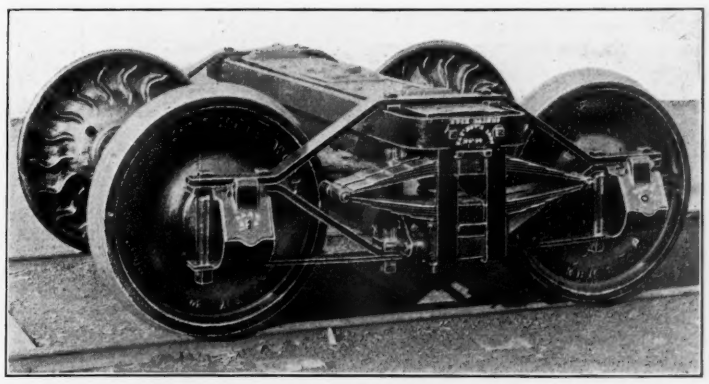
This car is intended for use on short branches in Ohio, where the traffic is very light; so light that the accommodations furnished by the car itself as to passenger and baggage space, with the possible addition of one trailer on occasion, will answer every purpose.

A Freight Car Truck With Elliptic Springs.

The experience of the Lackwanna Live Stock Transportation Co. would seem to indicate that it is economical to use the best spring arrangement possible with trucks for stock cars and also to provide some side play for the truck bolster. This company has had 251 palace stock cars running between New York and Chicago for the past eleven years equipped with trucks having elliptic springs and an arrangement of rollers under the bolster to permit a small lateral motion, and we are informed by Mr. B. A. Hegeman, Jr., the General Manager, that the results have been remarkably satisfactory.

The principal features of the truck above referred to are shown by the engraving. It was designed by Mr. Hugh Baines, and described in our issue of Sept. 30, 1892. It will be noted that 36-in. double elliptic springs are put under the truck bolster and just outside the frames, being reinforced by coil springs which are intended to prevent damage to the elliptic springs from a possible overloading. The elliptic springs are so adjusted as to carry the usual load at the best point for easy riding. Rollers directly above the elliptic springs allow a small lateral motion of the truck bolster, and it has been found that this feature is valuable in preventing wear of wheel flanges.

It is said that the replacement of the spring planks is one of the large items of expense with the ordinary diamond frame trucks; but in eleven years only 25 spring planks, of the 251 cars equipped with the Baines' truck, have been renewed, and the cost for maintenance in general has been unusually small. This is accounted for by the better action of the elliptic springs. The easy riding qualities of the cars also result in a smaller loss in the weight of stock shipped than is found with the more common form of truck. Probably if trucks of this type were now built metal bolsters and spring planks would be used.



Freight Truck with Elliptic Springs.

80,000 Lbs. Capacity Gondola Car for the Lake Terminal Railroad.

The accompanying engravings show the principal features of some rather remarkable low side gondola cars which the Lake Terminal Railroad, a part of the Lorain Steel Co., is about to have built. These cars were designed by Mr. F. H. Stark, Master Car Builder of the Cleveland, Lorain & Wheeling, especially for carrying rails 60 and 62 ft. long, but they differ from the usual long cars in that short material as well can be carried if equally distributed for a distance of 18 ft. from each end; instructions to this effect will be stenciled on the sides. The capacity will be 80,000 lbs., the length over end sills 66 ft. 4 in., and the width over side sills 8 ft. 11 in. It is expected that 200 of these cars will be built at once.

The following is a list of the principal timbers for the car body:

Name.	No. of Pieces.	Finish'd Size. In. x In.
Georgia pine—		
Side sills	2	5 x 14
Intermediate sills	4	4 x 8
Center sills	2	4½ x 8
Side planks	4	4 x 12
End planks	4	4 x 12
Oak—		
Cross-tie timbers	4	5 x 12
End sills	2	10 x 12¼
Draft timbers	4	6 x 9
Draft fillers	2	9 x 10
Sub-center sills	10	4½ x 5
Sub-side sills	6	3 x 5
Sub-side sills	4	5 x 5
Floor bolsters	2	6 x 8

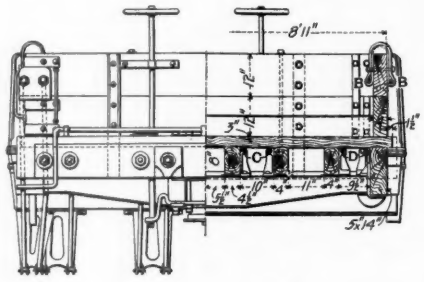
The flooring will be long-leaf Georgia pine, 3 in. thick, and from 10 to 12 in. wide, and the stakes 3½ x 4 in. and 4 x 5 in. oak. All the longitudinal sills are to rest in malleable iron pockets being cut with square ends, with the exception of the side sills, which will lip under the end sills. Malleable iron buffer blocks will be used.

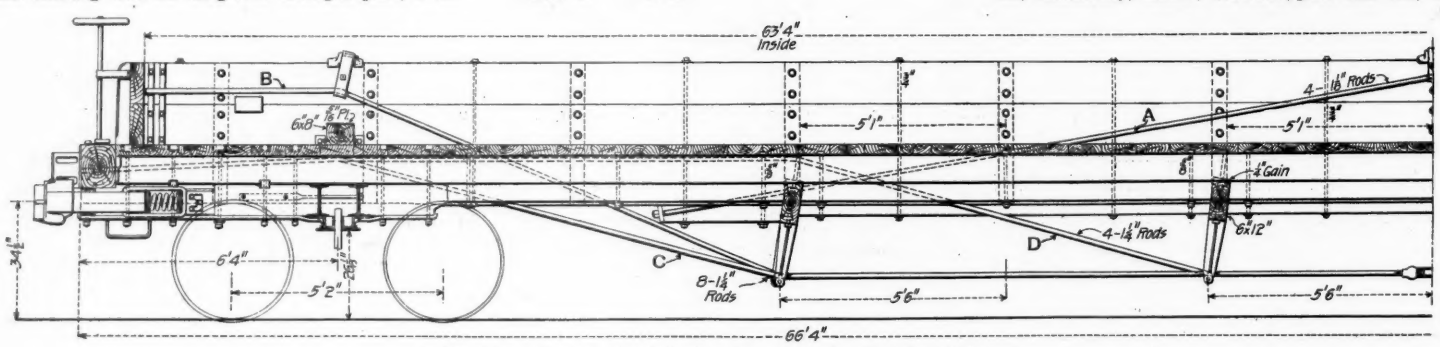
The arrangement of the truss rods is peculiar. It will be seen from the drawings that there are four needle beams, 12 truss rods 1¼ in. in diameter, and four counter truss rods 1⅛ in. in diameter. The four truss rods (C) nearest the center extend through the end sills, over saddles placed above the body bolster and beneath all the needle beams; the four rods (D) between the side and intermediate sills likewise extend through the end sills and over the body bolster, but support the central needle beams only, transmitting the vertical loads to points just above the outer needle beams; the four rods (B) pass through the end planks, over wrought-iron stirrups fixed to the tops of the side planks just above the bolsters and beneath all the needle beams. The four counter truss rods are placed on either side of the side planks and are supported by wrought-iron stirrups at the center of the car, while the ends of the rods pass through 1⅛ x 5 in. plates fixed to the ends of short sub-sills. A permanent floor bolster, 6 x 8 in. and faced with a ⅝-in. steel plate, will extend the full width of the car over each truck and be connected to the side planks by angles and cross-tie rods. The use of this bolster will permit of trussing the car with a camber of about 4 in. and still have the load of rails approximately level for the whole length. The lower edge of each bottom side plank will be cut out on the line of a true circle, commencing at the bolsters and having a middle ordinate of 3 in., while the full depth of 12 in. will be maintained beyond the bolsters to the ends of the car. This will allow a camber of 3 in. in the framing before the sideboards are affected.

The draft gear is clearly shown by the detailed drawings, and differs in some respects from the usual arrangements, principally in the provisions to insure increased strength. It will be seen that two wrought-iron anchor straps are bolted to the sides of the draft timbers; these have the ends of round section enlarged to 1⅜ in. in diameter, which pass through the body bolster and are secured by nuts and cotters, making a strong connection between the draft timbers and the body bolster. Also to provide greater strength wrought-iron straps ⅝ x 4 in., with lipped ends, are placed beneath the draft timbers and extend from the outer ends of those timbers to points back of the body bolster, all the draft bolts passing through these plates. There is also a centering device on either side of the coupler. This consists of malleable iron spring pockets, set in the draft timbers, each containing a single coil spring, through which passes a 1-in. bolt, with a washer, nut and spring cotter at the outer end.

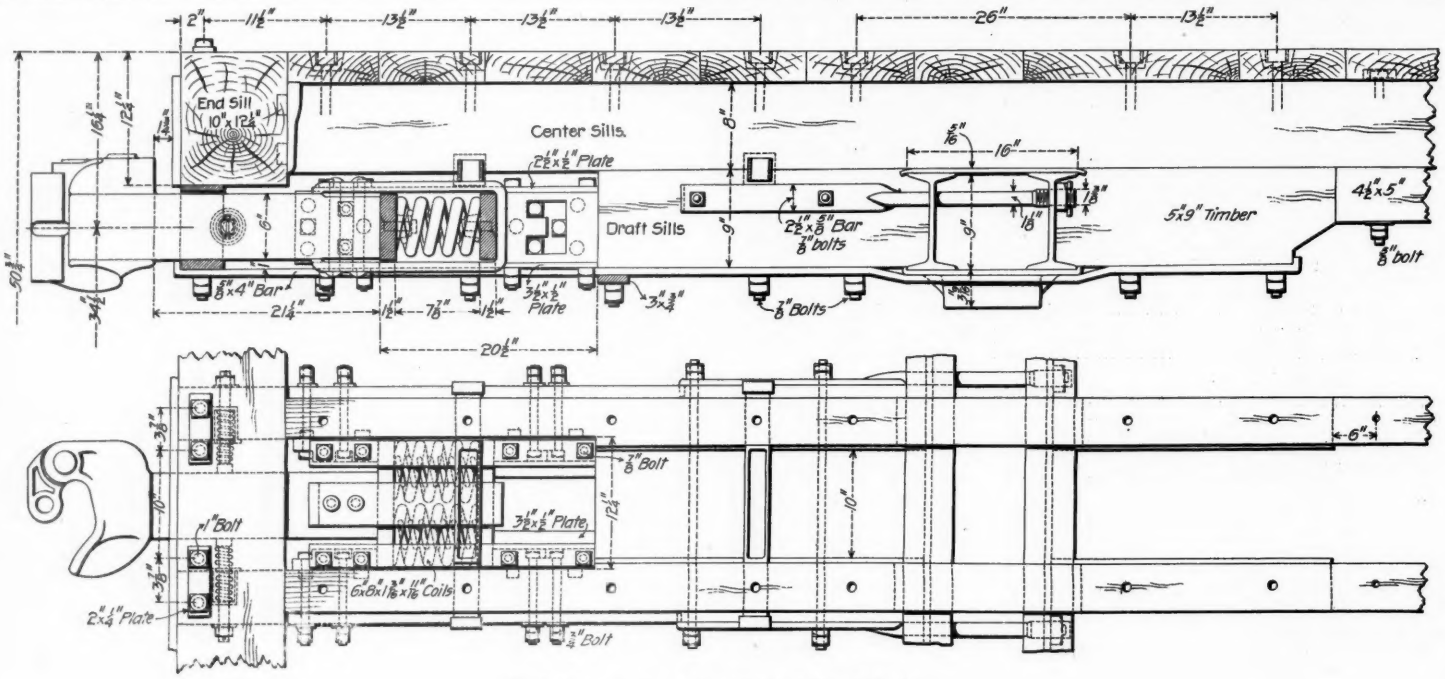
The body bolsters will be of the Bettendorf type, made of two 9-in. steel I beams, and Common Sense metal truck bolsters will be used. The trucks will have diamond frames, 13-in. steel channels for spring planks, and inside-hung brakes. Westinghouse air-brakes, National-Hollow brake beams, McCord journal boxes, and American dust guards are specified.

We are indebted to Mr. M. M. Suppes, General Manager of the Lorain Steel Co., for the specifications and drawings.





80,000 Lbs. Capacity Gondola Car for the Lake Terminal Railroad.



Draft Gear of the Lake Terminal Gondola Car

The Consolidated Street Car Company.

The Consolidated Street Car Co. was incorporated March 27, under the laws of New Jersey, with a capital stock of $18,000,000 ($8,000,000 seven per cent. cumulative preferred stock and $10,000,000 common stock) to build street railroad cars, automobiles, omnibuses and other vehicles for conveying passengers, freight or express, and to manufacture trucks, wheels and other railroad supplies.

While the incorporators are given as W. P. Chapman, Jr., of New York City, Albert S. Ridley, of Brooklyn, and F. B. Pollak, of Summit, N. J., the combination really takes in all the principal builders of street cars in the United States. These include the J. G. Brill Co., Philadelphia; St. Louis Car Co., Laclede Car Co., Brownell Car Co. and American Car Co., of St. Louis; John Stephenson Co., Ltd., New York City (with a plant at Elizabeth, N. J.); J. M. Jones' Sons, Troy, N. Y.; G. C. Kuhlman Co., Cleveland, O., and the street car building plants of the Barney & Smith Car Co., Pullman's Palace Car Co., the Wells & French Co., and the Jackson & Sharp Co., and three makers of trucks for street cars. Those not in the agreement are the Laconia Car Co., Wason Mfg. Co., Briggs Carriage Co., Amesbury, Mass.; Newburyport Car Co., Newburyport, Mass., and the Jewett Car & Planing Mill Co., Jewett, O.

The company is backed by Brown Bros. & Co., J. Pierpont Morgan and J. & W. Seligman & Co. and others, whose interests are closely identified with many of the large street railroad systems in the United States.

It is the present intention of the company to maintain five plants in America, one each at San Francisco (to be built), St. Louis, Cleveland, Philadelphia and Elizabeth, N. J., and to build plants in England, France, Germany and Russia. The company will have facilities for building cars complete, including the lumber.

The Standard Air Brake for Street Cars.

The Standard Air Brake Company will put its brake to the trucks of about 160 cars that are now being built for the electric service of the Third Avenue Railroad in New York City. The brake is a modification of the old straight air system with an electric control of the pressure in the main reservoir to rise and fall between comparatively narrow limits.

The compressed air is supplied by an electrically driven pump, which delivers the compressed air into the reservoir from which it is directly admitted to the brake cylinder through a simple form of engineer's valve worked by the motorman.

The motor, compressor and valve are of the ordinary type, and the first peculiarity that is met with is the electric controller, by which the pressure in releasing the armature from the pull of the magnet and also stopping the pump.

Meanwhile the rise of pressure has been lifting the piston M in the same way. This latter piston is connected with a rheostat through the bell crank OPQ. When there is no pressure in the cylinder L and the piston M is at the bottom of its stroke, the rheostat blade is at the extreme left of its stroke.

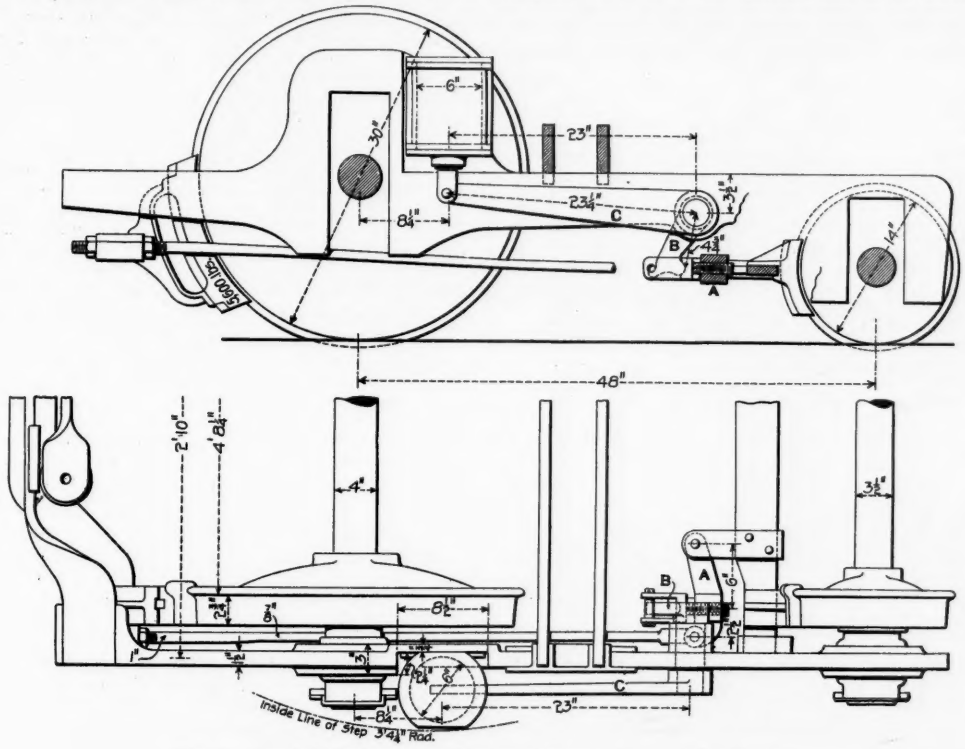


Fig. 3.—Standard Brake on a " Maximum Traction " Street-Car Truck.

the main reservoir is regulated. This mechanism is shown in vertical section in Fig. 1. The center of the apparatus is occupied by a horseshoe magnet A. The armature of this magnet extends down and through it and is fast to the two valves B and C. The former is seated by being pushed down, and the latter by being raised. As the two valves are on the same stem, only one can be seated at a time. The passage above B opens into the atmosphere so that when the valve B is away from its seat, there is a free exit for compressed air from the passage D into the atmosphere. When B is on its seat, that means of escape is closed, and compressed air can pass from the channel E beneath the valve C to D. It will be seen from the construction that it will be the tendency of the compressed air in E as well as that of the spring beneath C to close this lower valve. When, however, a current of electricity is passed through the magnet the armature is drawn down and the valve C is opened, while B is closed.

Under normal conditions, when the car has been standing and the connections are made with the

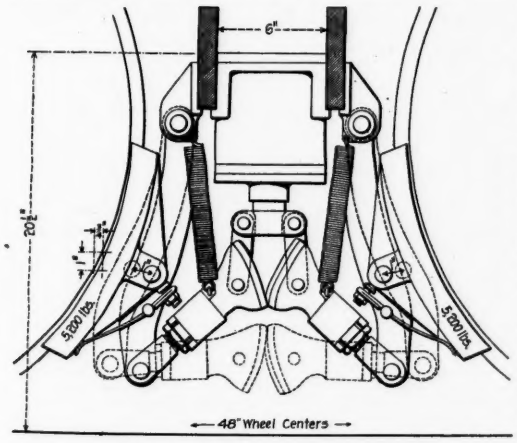


Fig. 2.—Standard Brake on a Street-Car Truck.

main lines, a shunt circuit enters the controller at F, passes across through the switch blade, shown by dotted lines to G, thence through the magnet to the motor, which straightway starts the pump. The current in passing through the magnet pulls down the armature, closing the valve B and opening C.

At H in the bottom of the controller, there is a connection to the main reservoir from the channel E. This air from the reservoir fills the space in the cylinder I beneath the piston K, and tends to force the latter upward against the spring tending to hold it down. The air also passes up beneath the valve C and through D into the cylinder L beneath the piston M and tends to raise that one also.

As the air pressure increases the piston K is raised, and when it has reached 70 lbs. the switch blade F G is tripped and the circuit through it is broken. When in this position, there is a resistance of 50 ohms. in the coils, and the minimum current through the motor, thus adapting it for work required when there is no pressure in the reservoir.

As the pressure increases and the piston rises, the blade is thrown to the left and as it strikes the successive contact points it cuts out one coil after another of the rheostat, thus sending an increasing amount of current through the motor, proportioned to the amount of work that it is called upon to perform due to the accumulating pressure.

Finally when the switch blade is tripped, the motor is stopped and the valve B opened, the air in L allowed to escape to the atmosphere, the piston M again descends to its lowest position, and is ready to repeat the process of varying the current supply when a pressure is again admitted beneath it.

On the other side of the controller, when the pressure has fallen to 62 lbs. per square inch, the piston K drops to a point where the switch blade is again thrown across so as to send a current through the magnet. This lifts the armature, and by closing the valve B and opening C, admits the pressure beneath the piston M, which now rapidly rises and throws the rheostat blade to the proper contact point for the work which the motor is called upon to perform. Thus the pressure is allowed to fluctuate between the maximum and minimum limits, indicated by the action of the controller, as described.

The motor used for driving the compressor is of the series-wound multipolar type especially designed for this service, and inclosed for protection against dust and moisture. It works at a speed of 750 revolutions per minute under a full load, and is geared to the compressor shaft in the ratio of five to one. The compressor is of the piston type with compound cylinders, and, in the case of the equipment to be applied to the Third Avenue Railroad, will work up to a pressure of 70 lbs. per square inch. Owing to the comparatively low pressure carried and the intermittent character of the work, it has been found to be unnecessary to use a water jacket on the cylinders.

The engineers' valve is simple. It consists of a plain D slide valve with a long lap on one side. In the seat beneath it there are three ports; one is the exhaust port opening into the atmosphere; the second is the emergency-application port, and is a rectangular opening whose length is equal to the width of the exhaust port; the third is the service port, and is a round hole about ¼ inch in diameter. Under ordinary running conditions the valve is on lap, covering the service port and opening the passage from the brake cylinder through the emergency port to the atmosphere. It is held in this position by a piston on the valve rod. This piston works in a cylindrical chamber at the side of the valve case, and is packed by an ordinary leather cup packing. The pressure which always exists under working conditions, in the valve case tends to force this piston outward and to hold the valve in the running position or on lap. The use of this piston has the double advantage of holding the valve in the position named and of doing away with the necessity for a stuffing box and packing about the valve stem. The rod to the valve handle runs from the piston to a crank, and all leakage of air from the valve case is thus prevented. To apply the brakes the valve is moved to one side. The first part of the motion covers the emergency port; then the service port is opened, after which, if the motion is continued, the emergency port will be uncovered while the service port still remains open. The graduation of the pressure in the brake cylinder is, therefore, controlled by the motorman, and he manipulates his brake according to the speed of the car and the feeling of the brakes. There is no equalization of train pipe and reservoir pressure, but the latter is admitted directly into the brake cylinder and is cut off when a sufficient pressure has accumulated in the latter to do the work. This simplifies the apparatus and reduces it to the old straight air principle.

The ordinary brake cylinder is 7⅛ inches in diameter, with a stroke of 11 inches, and is designed on the lines of the brake cylinders used on steam roads, under ordinary conditions. But, in the case of the cars of the Third Avenue Railroad, it was necessary to make a modification in the construction and arrangement in order to meet the requirements of the officials who wished to have independent cylinders on each truck. Two types of trucks are used, each made by the Peckham Motor Truck and Wheel Co. In one there are four wheels of equal diameter, and the truck framing resembles in all essential particulars a four-wheeled passenger truck, being of a design similar to that described in connection with the tests published in the Railroad Gazette on Nov. 25, 1898. In the case of these trucks it was specified that there should be a cylinder between the wheels on each side of each truck and that the wedge type of brake should be used. The method in which this design has been worked out is shown in Fig. 2. The brake shoes are carried by levers pivoted to brackets that are bolted to the transoms of the truck, as shown. To the lower ends of these levers the cams and their rods are attached, with rotracting springs acting under tension tending to pull them up. The cylinder has a diameter of 6 inches, and a stroke of 4½ inches. With the mechanism as proportioned in the illustration, it is possible to apply a pressure of 5,200 lbs. to the shoe of each wheel.

The other truck to be used is what is known as

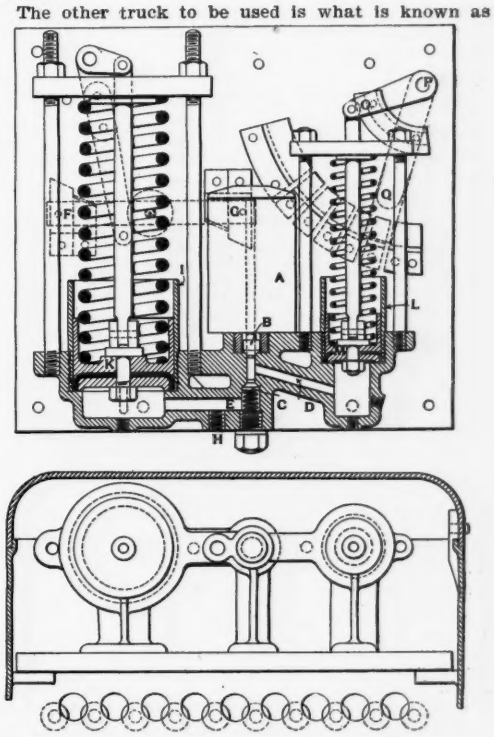


Fig. 1.—Automatic Current Controller and Rheostat.

the maximum traction truck, in which there is one large and one small pair of wheels. In this truck the major portion of the load is carried by the large wheels so that, in breaking, it becomes necessary to put the greater brake pressure upon them. Here again two cylinders are used on each truck, Fig. 3. These cylinders have a diameter of 6 inches and a stroke of 6 inches, and air is admitted to the top. The lower end of the piston rod takes hold of the end of the lever C, which is keyed to a shaft turning in a bearing in the side frame of the truck. To the inner end of this shaft there is keyed a short lever B, which is fastened to the floating lever A by a short connection. The point of application of this connection is so adjusted that the two ends of the floating lever are inversely proportioned to the braking stresses that they will be called upon to apply to the shoes on the large and small wheels. When the full pressure of the air in the reservoir is admitted to the brake cylinders, the pressure upon the shoes will be 5,600 lbs., and 2,400 lbs. for each of the large and small wheels respectively.

RAILROAD GAZETTE

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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.*

It is to be regretted that Mr. Tripler's remarkable work in liquefying air should have got mixed up with some perpetual motion ideas. Men with well-trained minds will be amused at the absurdity of the claims recently made in a popular magazine article, and some may fear that Mr. Tripler's work has degenerated to the level of the Keeley motor or the "series engine." It is hoped, however, that Mr. Tripler has not been correctly quoted in the statement: "I actually find that I can produce for every two gallons of liquid air that I pour into my engine a larger quantity of liquid air from my liquefier. . . . I have actually made about 10 gallons of liquid air in my liquefier by the use of about three gallons in my engine. There is, therefore, a surplusage of seven gallons that has cost me nothing which I can use elsewhere as power." Mr. Tripler denies that there is any perpetual motion idea in this, saying in substance that the heat of the atmosphere is really the source of power and that his engine simply changes the energy from the sun which has been stored in the air into another form of energy. If this is not perpetual motion in theory, it certainly would be in fact, could the suggestion be carried out successfully.

How much "surplusage" of mental effort writers might save if they would hold fast to the A B C principles of mechanics. As the announcement of such epoch-making discoveries have their evil effect and are sometimes brought out to deceive the innocent investor or comes from a lack of familiarity with elementary principles, it may not be out of place to call attention to the two main propositions in the general law of the conservation of energy, which law is accepted as fundamental and is as universal in its application as the law of gravitation. These principles are (1) the total amount of energy in the universe is constant, and (2) the various forms of energy can be converted the one into the other. This second principle often misleads even the careful thinker, because the work required to change one form of energy into another is not properly accounted for. It might not be readily apparent to some wherein lies the fallacy in Mr. Tripler's statement quoted above, and it would be waste of time to attempt to show the weak point. It might be well to say, however, that if the process could be indefinitely carried on we might have all the air in the universe liquefied and come out finally with an inexhaustible supply of stored energy in the liquid air. When applied to machines that are supposed to give something for nothing, the unyielding and unchanging law of the conservation of energy usually exposes the fallacy.

The presidents (or representatives of presidents) of about twenty-five railroad companies, comprising the principal roads between Chicago and Lake Michigan and the Ohio and Mississippi rivers and beyond, met in Washington March 23 to hold a conference with the Interstate Commerce Commission. The press reports, condensed, say: The result was a verbal assurance on the part of all the roads represented to maintain uniform tariffs. Each reported absolute maintenance of published rates, indicating the most thorough co-operation in Western territory. No road had any definite complaint of secret rate practices to report. It was recognized, however, in the discussion that mutual jealousy and distrust were somewhat prevalent, and that general confidence must be established. Those present were inclined to feel considerable apprehension as to the future, when the present large volume of freight may diminish or other conditions arise which ordinarily might demoralize freight conditions. The anti trust law was discussed and efforts to overcome this obstacle were informally mentioned. On the second day a committee consisting of Messrs. Paul Morton, H. G. Burt, A. C. Bird, B. F. Yoakum. C. G. Warner and E. S. Washburn met with the Interstate Commerce Commission to further consider ways and means, but nothing definite was done. The committee will meet in Chicago on April 11 in an endeavor to shape some line of action to offset obstacles in the path of concerted action on the part of the roads. Invitations will be sent by the Interstate Commerce Commission for a further conference on May 10, when the committee will report. After the conference Chairman Knapp and the other members of the Commission were emphatic in an announcement that the Commission would prosecute any violation of the law that came to its attention. It was pointed out to the railroad committee that not only the roads would be investigated, but the shippers taking advantage of secret rate practices would be investigated with a view to prosecuion. . . . There was no concealment of the apprehension felt by all, that individual roads might take independent action which would nullify the present good understanding.

The most noticeable difference between this conference of Western men and that in which the Commission conferred with the Eastern presidents is that the Western men consented to talk a little bit after the meeting. At Chicago the art of news gathering has been so refined that men who have been accustomed for a few years to being interviewed by the reporters seem to talk in spite of themselves. However, the visitors to Washington have not told anything astonishing, nor does the report of this conference indicate that anything that would be astonishing has been concealed under the silence that surrounded the former conference. The reporters had to amplify with great skill to fill out the short half column that is now before us. The gist of what they say is that there is a good prospect that rate cutting is henceforth to be open, and therefore lawful, instead of secret and unlawful, as it has been heretofore; but that rate cutting is still to be feared. This is a favorable outcome. There were two evils to be dealt with: (1) lawbreaking and agreement-breaking; (2) excessive reductions of freight rates. It is only the first one that the Interstate Commerce Commission can cure (if it can cure either), and perhaps only the first half of that; and a conference with that body cannot be expected to do much toward the solution of the other problem. Competition of ocean ports, as New York and New Orleans, cost of carrying the freight, chances of getting return loads, relative importance of other and better paying traffic—all these and other points hard to decide come into the computation to be settled before any one can decide what ought to be done about reducing rates when cars are idle; so that in the future, as in the past, each manager will probably wait just as long as he dares to before reducing rates for the purpose of increasing his share of competitive traffic. We can only hope that each manager, having now resolved to do his fighting openly, will have pluck enough to suffer some loss rather than get a little traffic for himself by a reduction which will be sure to lead to greater losses to himself and all his competitors.

Rapid Transit in New York City.

The Metropolitan Street Railway Company has made a proposition to the Rapid Transit Commissioners of the City of New York to build and operate the tunnel railroad that the commissioners have long been trying to get built. We say the Metropolitan Street Railway Company, for that is what it comes down to, although the franchise would be given to a company especially organized for the purpose, which company would build and equip the tunnel railroad and then lease it to the Metropolitan.

The proposition in general is to build an underground railroad on the lines laid down by the Rapid Transit Commissioners, and to the dimensions and with the general characteristics that they have decided upon. All of these are reasonably familiar to our readers and we need not go again into that part of the matter. The company would build the main line from the south end of the island to the vicinity of Ft. George within three years, and then, when the part so built began to pay five per cent. on its actual cost, the company would complete the project of lines as laid out by the Commissioners within two years more. This new railroad system would be worked in close connection with the surface system of the Metropolitan, passengers being transferred at frequent points from one to the other; and, indeed, arrangements would be made for an actual transfer of cars from one set of tracks to the other. The fare on the way trains of the underground would be five cents throughout, and passengers using these trains would be transferred to or from the surface lines for an additional fare of three cents. The fare on the underground express trains would be 10 cents, and passengers using these trains would be transferred to and from the surface lines without any additional payment. Arrangements would be made with the New York, New Haven & Hartford and the New York Central & Hudson River for an interchange of passengers to and from their lines within the city limits.

The express trains would run at an inclusive speed of 20 miles an hour from terminus to terminus and at 30 miles an hour for at least two miles below Forty-second street.

The company would pay to the city of New York five per cent. on gross receipts, provided that if the receipts are insufficient to pay the rental of five per cent. on cost of building and equipment to the constructing company, and operating expenses, including taxes, the percentage to be paid to the city shall be reduced accordingly.

The Board of Rapid Transit Commissioners passed a resolution instructing its lawyers to prepare such amendments to the Rapid Transit acts as may be needed to enable the board to consider and act upon these propositions. The president of the board, Mr. Orr, is reported as having said that this proposal seems exceedingly attractive, although he is still in favor of municipal building if the city would only provide the funds. He considers, however, the prospect of this being done as exceedingly remote. Mr. Rives, another member of the commission, is reported as having spoken in much the same way, and altogether the attitude of the commission toward this proposition is very encouraging.

This is the most hopeful event for rapid transit in the City of New York that has happened for years. The Metropolitan Company is in earnest and is acting in good faith, and is quite confident that the matter will go through. This much we can say with considerable positiveness, for we have excellent authority for it. The commissioners as a body evidently are satisfied that the proposition now before them offers the best visible chance of getting rapid transit for the city.

It remains to be seen whether this excellent plan will be defeated in the courts and in the legislature. It will be opposed by at least three, more or less dangerous, elements. The business rivals, the strikers, and the professional friends of man, who want the city to do the work, will naturally try to defeat this new project. Fortunately, it is seldom easy to unite these forces for effective action.

No company that exists now or that could be formed could have as much interest as the Metropolitan Street Railway Company in building and working a tunnel railroad. In fact we have long supposed that any other company would work at a loss, for say five years at least, and for perhaps 10 years. It would compete with the surface lines for the short haul business and with the surface lines and the elevated railroad for the long haul business, and would be left with considerable express business, on which probably it would lose money. With the Metropolitan, however, the case is different. The underground system would contribute traffic from new territory, but this would be perhaps the least of the advantages offered. The great gain would be in the relief of the surface lines during the crowded hours. There are a good many hours in the day now when the Metropolitan would be better off if a considerable percentage of its patrons would leave it and travel by the elevated railroad. In the hours when the cars are very full every long trip passenger who pays the company five cents keeps three or four (more or less) short trip passengers from paying the company 15 or 20 cents. One of the most important objects sought for in paralleling the Broadway line in the lower part of the city and sought for in this new scheme is to relieve Broadway and permit the cars running on that street to be given up to the short trip passengers who have business right along the street.

The very clear headed gentlemen who are managing the affairs of the Metropolitan are learning something about traffic in a great city every day.

Their Fourth avenue change gave them one great lesson. Here the equipment was hardly changed from the slow and dingy horse cars to the swift and attractive electric cars before the road became crowded to its greatest capacity, and to-day there is no margin left in Fourth avenue for future development. The Eighth avenue and the Sixth avenue lines recently changed to electric working are pushing on to the same result; and so these gentlemen believe they see that they could make money out of a relief line even as costly as an underground system of railroad must be. The reader will see at once, however, that while they could do this an independent company might lose money.

At any rate, this is the first serious and bona fide offer by a responsible and thoroughly competent company, and very likely it will be the last one to be made for a good while if this is not accepted. The Metropolitan Company knows precisely what it is doing, for it has made careful and even exhaustive studies of the engineering side of this matter. Months ago its engineers and draughtsmen and computers spent weeks in examining the data accumulated by the Rapid Transit Commissioners and in getting new data for themselves. Consequently, it is fair to assume that if the Metropolitan gets the franchise asked for now its agreement can be carried out and will be carried out quickly and successfully.

The effect of this new development on the Manhattan Elevated must be very stimulating. A number of things have come to our knowledge recently which lead us to believe that the Manhatan is likely to go on soon with its electrical equipment. Naturally, one would suppose that such action would be hastened by the proposition made by a strong company to at once build an underground railroad and so the city may profit on all sides by the movement. It is greatly to be hoped that misguided friends of "rapid transit" will not lend themselves to opposition to this, which seems a very admirable scheme.

A Real Brake Failure and a Moral.

The nature of the air-brake is such that evil communications corrupt its manners. This is fundamental. Consequently an excellent air-brake makes a weak missionary. This is illustrated by an accident which lately happened.

The train consisted of a locomotive, 25 loaded freight cars and a caboose. The four cars next to the locomotive were equipped with air-brakes, that nearest the engine having a brake made by one air-brake company and the three next following being equipped with the brake of another air-brake company. The engineman found that even a very light reduction of the train-pipe air pressure for a service application caused a quick action application of all. But, with careful handling of the slack of the train, this quick action application was kept from doing injury to draft gear. But finally the train parted between the eleventh and twelfth cars. The engineman gave the proper whistle signal and moved on out of the way of the rear end of the train. The rear portion was stopped by the hand brakes, and a second section of the train, which followed, was stopped so that the locomotive stood some 40 or 50 feet behind the caboose of the first section.

The engineman of the first section backed the forward portion of his train and, upon nearing the rear portion, he applied the air-brakes with a light reduction of train-pipe air pressure. As in previous applications, this resulted in an emergency application of the brakes, which caused the train to part between the fourth and fifth cars—that is, between the last air-brake car and the first non-air-brake car. The seven non-air-brake cars continued to move on with considerable speed and collided with the rear portion of the train. The force of the collision was sufficient to start the rear portion in motion, which caused a second collision with the locomotive of the second section. The result of these two collisions was that four drawheads were broken, together with the bumper beam and headlight of the locomotive of the second section. The brake beam upon the caboose was broken and the rear axle was sprung so that the rear wheels of the caboose had to be slid to the terminal, 17 miles distant.

An examination of the brakes showed that their defective operation was entirely due to the single brake on the car next to the locomotive, which was not susceptible of a service application, but invariably caused an emergency application of all the brakes in operation, regardless of the most careful manipulation by the engineer.

We were going to point the moral, but it seems too obvious.

The perennial Boynton Bicycle Railway is again in bloom. This time the Boston, Quincy & Fall River Bicycle Railway Co. permits the public to buy some of its precious stock. It offers non-voting stock at 110, par being 100. This is very generous considering that the company is going to build railroads to handle all the passenger traffic in and about Boston, going as far as New Bedford and Providence. These passengers can be carried at speeds varying from 50 miles an hour to 200 miles an hour, according to the number of stops made on the way. The "committee" which signs the prospectus asks several very searching questions, as, for instance, "if it pays to run street railways seven miles an hour, will it not pay tenfold to run them 70 miles an hour?" To this we can make no answer, although this means of computing the value of speed is almost too simple to satisfy us. We should have said that the profit ought to vary as the cube of the speed; that is, if it pays to run street railroads seven miles an hour, it will pay one thousand-fold to run them 70 miles an hour. We venture to say that the committee, like Lord Clive, will stand amazed at their own self-restraint when they think again about the matter. This committee, headed by Major-Gen. Oliver O. Howard, appeals "to those who do their own thinking to act independently of those operating at the command of foreign syndicates." It seems that these slaves of the foreign syndicates, being "the leading electric and railway engineers of America," refuse to endorse the Boynton Bicycle Electric Railroad. Another of these enduring schemes is the famous one of Mr. Behr, which recently led the respectable Evening Post, of New York City, to predict the speedy disappearance of the steam locomotive. Mr. Behr has organized a syndicate to build a line of single rail railroad from Manchester to Liverpool. This is to be called the Lightning Express Railroad. It will make the run, 30 miles, in 20 minutes, including stops, and between stations will run up to two miles a minute. But Mr. Behr says that he can run to three miles a minute if required. Mr. Behr, like Gen. Howard and his associates, promises not only great speed, but reduced fares, because so much can be saved in working expenses. We have no doubt that both enterprises will find plenty of money—for the present.

In Michigan the political atmosphere has for several years been quite breezy, so that it is perhaps not surprising to find evidences of agitation in new quarters at any time. Mr. Sybrant Wesselius, familiarly spoken of by the newspapers as "Wess," who was appointed State Railroad Commissioner a year or two ago by Governor Pingree, has now been ruthlessly "turned down" by the doughty Governor; "bounced," it appears, without an hour's warning; and the Commissioner, in response to the Governor's letter, writes an answer of about two columns and gives it to the newspapers. Of the merits of the Governor's action from a public standpoint, the outsider is no better informed than before the letter was written; but, as illuminating the theories of government that prevail in Michigan, there is one gem that is worth quoting. It is Mr. Wesselius' opening paragraph:

"Over the rug of the Galloway bull's hide, in the residence of the late James M. Turner, in this city, some years ago, a political partnership, in the interest of the people, was formed. One of the members of that co-partnership is dead. The association existing between the two remaining members of the co-partnership having been dissolved, by a letter received from you this day, and a partial accounting rendered of its assets, your excellency will permit me to render an accounting of the balance. The partnership was started with much enthusiasm. You will remember of what its capital and promise of future success so largely consisted. There was our lamented friend's desire to teach the people how to distinguish between the interests of the gravel train and the board of directors; there was my willingness to sit at the feet of any Gamaliel who would assist in raising the standard of Michigan laws on certain great public questions to the standard of such laws in older states. There was your general disposition to raise hell. * * * "

A maker of brake shoes calls our attention to the fact that the number of train accidents in the United States during the last two or three years has increased in proportion to the number of train miles. He has taken the annual records published in the Railroad Gazette of March 10, page 173, and has computed, for the last ten years, the number of train miles run to each rear collision, the number to each butting collision and the number to each derailment. As would be expected, by anyone who has followed the records from year to year, the most favorable averages appear in 1894, '95 and '96, when business was everywhere very dull. Thus in 1896, with 850 millions of train miles, there was one rear collision to every 3,728,070 miles. The best record in butting collisions was in 1895, when there was one to each 7,651,375 train miles. These averages, as well as those of derailments, have grown larger as business increased and have got back to about where they were six, eight and ten years ago, when rear collisions were about 1 in 1,800,000 and butting about 1 in 3,000,000. The proportional increase since the return of activity indicates to our correspondent that more energetic efforts ought to be made to prevent accidents; and he modestly suggests that more efficient-brake shoe may be "of supreme moment" in preventing collisions. We agree with him about brake shoes, of course, but we venture to suggest that possibly some of the increase in the percentage of collisions may be explained by the mathematical argument that the more numerous the trains the greater the chance that they will get in each other's way; and the increase in derailments may be due to the increased use of old cars, or the more frequent overloading of cars, or the larger percentage of inexperienced trainmen in the service. We advise the vigorous application of power to the brake shoe, both in purchasing agents' offices and in use on cars, but we also advise care in drawing deductions from the accident record.

Discussion of the Standard Code.

An account of the discussion of a part of the report of the Train Rule Committee presented to the American Railway Association at its last meeting was given in the Railroad Gazette of March 3, page 155. We continue our abstract, beginning after Rule No. 99. Rule No. 100 was modified to read, "[blanks] must take the place of the brakeman whenever necessary," the word "front" being omitted. (The effect of a vote in the meeting to modify a rule was simply to refer the subject back to the Committee, the whole code having been recommitted at the end of the discussion.)

Rule 104, as reported by the Committee, says that "caution must be used by enginemen of trains approaching stations where any train is receiving or discharging passengers." This rule elicited considerable discussion. It was claimed that there was no necessity for it on single track roads. In many cases an engineman cannot decide soon enough whether a stop is required or not, and he cannot reasonably comply with the rule. The rule is needed at excursion stations and other places as well as at regular stations. The difficulties of enforcing the rule with consistency led one prominent member to totally oppose its use; but another manager of experience, who had worked both with and without it, felt sure that he preferred its retention. The meeting refused by a decided majority to recommend any change in the rule but later it was again taken up and referred to the Committee, with the request that the propriety of entirely eliminating it be considered.

This ended the discussion of the principal chapter of the code and the meeting proceeded to discuss the train-order rules. The phraseology of the rules prescribing the things to be done by the despatcher and by the operator in transmitting orders were discussed at considerable length. It appeared that in some details the formula in the Standard Code is not closely followed. On roads where "19" orders are not used the phrase "31 copy 5" has gone out of fashion. Neither does the operator say "i i" in giving "O. K." Finally, Mr. Loree moved the adoption of three new rules to take the place of Nos. 210, 211, 212, 213 and 214, and his motion was carried. Mr. Loree's form condenses the matter previously shown and describes the practice now in actual use. Both the Committee's report and Mr. Loree's proposal contain a provision allowing an operator to acknowledge the receipt of an order by saying "X, O. K." without repeating the order. An order to which "X" has been given is a holding order.

Inquiry being made why old Rule No. 468 had been omitted, Mr. Sullivan, replying for the committee, said that a rule concerning the delivery of train orders to men at work in yards had no place in a code for a single track road.

Rule 210, retaining the form long in use says that those to whom a 31 order is addressed, except enginemen, must sign it. A member moved that this rule be amended so that enginemen might be required to sign orders. This motion was referred to the Committee, no one calling attention to the fact that the cutting out of two words ("except enginemen") which any superintendent can do, in making up his code, would answer the object aimed at.

Rule 218 (old No. 470) says that trains must not assume rights which are not conferred by orders addressed to it. Mr. Loree moved that this should be amended by adding "except as in Rule 93" (old No. 40). The latter rule permits the exchange of orders where a disabled train is overtaken by another. This motion prevailed.

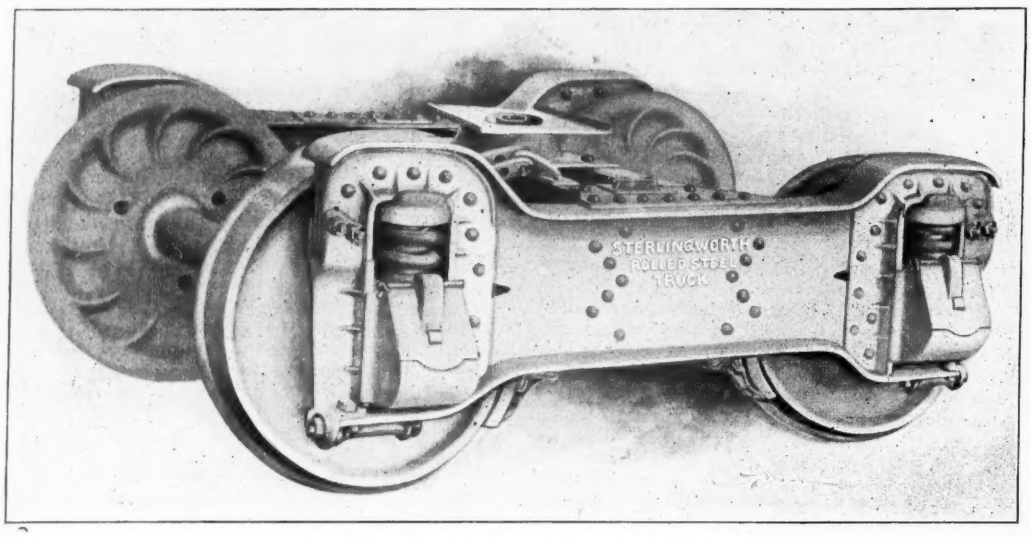
In the old code Rule No. 471 (now No. 219) contained three paragraphs of instructions to train despatchers which are now omitted. Inquiry was made as to the cause of this omission and Mr. Sullivan, for the committee replied that it was thought proper to gradually eliminate explanations and cautionary paragraphs which were necessary a dozen years ago, but which now, with well drilled men, are "neither necessary nor desirable."

Under Rule 221 there was considerable discussion as to whether a train stopping at a station where the train order signal is opposite the telegraph office, having passed the signal while it is in the stop position, is complying with the rule not to pass a signal at "stop." Prominent men claimed that this practice was permissible, the rule remaining as it is, but a motion to add a note recommending roads to adopt supplementary regulations if they saw fit was lost.

In discussing the forms for telegraphic orders, criticism was made of Paragraph F under Form H, as not conforming to the duplicate order principle,

and a motion prevailed to change the instructions to read: "When an extra receives orders to run over working limits it must be given a copy of the order sent to the work extra." Under Form K a motion was carried to change the instruction to read: "The train annulled loses both right and class between the points named and must not be restored under its original number between those points."

After some discussion of the blanks for train orders, in which it seems to have been agreed that yellow manifold is much better than white paper, a motion was carried to refer the whole code back to the committee on train rules and the meeting proceeded to take up other business.



Sterlingworth Rolled Steel Freight-Car Truck.

Sterlingworth Rolled Steel Freight-Car Truck.

The first one of these trucks, designed by Mr. G. R. Joughins, Mechanical Superintendent of the Intercolonial Railway, and Mr. Edward Cliff, was put in service three years ago, has run 111,000 miles, and has had no repairs except one renewal of the wearing plates which line the pedestals

The transom is made of two 15 in. channels, stiffened at the center by two channels riveted in on each side of the center plate. Angle irons, of ⅜ in., steel, fasten the transom to the side plates. In order to make a rest for the side bearings, and also to stiffen the truck and prevent its getting out of square, a steel plate, ⅜ in. thick, is riveted to the upper flanges of the transom channels and to the upper flanges of the I-beams which form the side plates. A similar, but smaller, stiffening plate is riveted to the under side of the I-beams and transom flanges.

The sides are made of 15 in. steel I-beams, with a portion of the material stamped out from each end. After being so stamped out the ends are spread and shaped by a "bull dozer" to the form shown in the line drawing.

The malleable-iron pedestal is attached to the side plate by ten rivets, but it is so fitted that the weight of the load is not transmitted through these rivets, the bearings being against the web and flanges of the shaped I-beam. The hinged pedestal jaw, a distinctive feature of this truck, permits changing a pair of wheels without lifting the car. The jaw is opened after removing one bolt at its upper end and the three locking bolts below. The upper end of the jaw is forked and rides astride the pedestal casting, on a curve shown by dotted line, so that the strain is transmitted by the malleable iron, and not through the bolts. If the upper bolts were taken out the jaw would still remain locked in. Under the pedestal there is riveted to the I-beam flange a small iron sleeve through which the one horizontal and the two vertical locking bolts run. These bolts have elastic nuts and cotters. The inside vertical walls of the pedestal are protected by $\frac{3}{16}$ in. steel wearing plates. The spring caps are fashioned in two ways; either as an integral part of the malleable pedestal, or as a separate casting to be inserted.

The drawings show the truck as now made for 60,000-lb. cars, with 4¼ in. x 8 in. journals. It weighs 1,525 lbs. Only slight changes are made for 100,000-lb. cars, so that the truck for the larger capacity car weighs only 1,550 lbs. Its strength is computed with a factor of safety of four for the dead and live loads.

The makers, the Sterlingworth Railway Supply Company, of Easton, Pa., consider that they have a stronger truck than can be made from pressed steel because the metal in the flanges of the channels and I-beams has not been punished by bending, and also because these flanges are rolled much thicker than the webs, putting extra metal in the upper and lower members of the beam where the strains are heaviest.

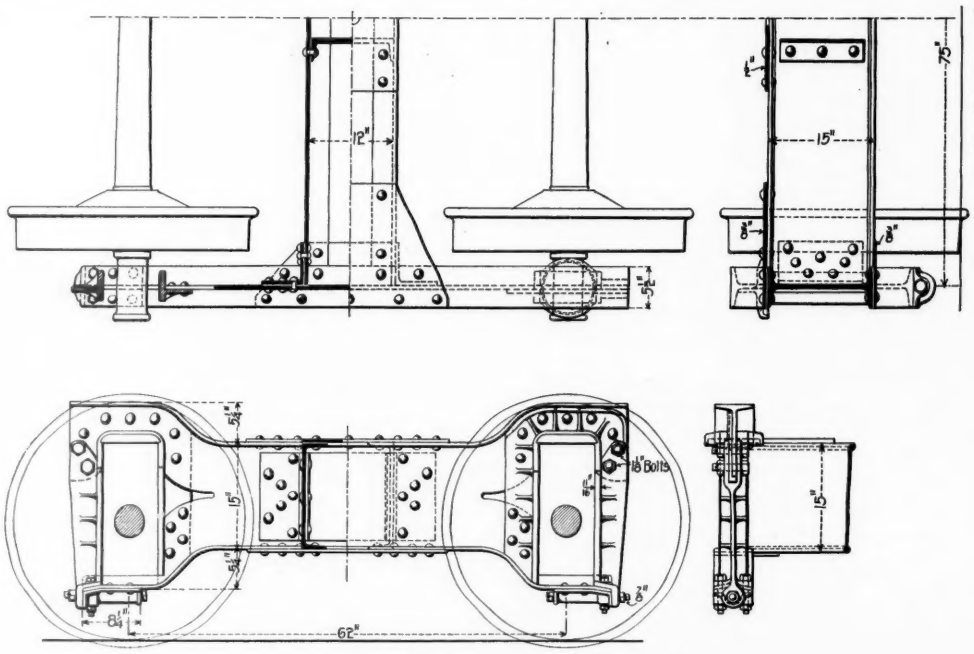
Canadian Railroad Building, Recent and Prospective.

Manitoba.

In the year 1898 five distinct companies were engaged in railroad building in the Province of Manitoba. Their work in detail was as follows:

Manitoba & Southeastern.—This road is expected soon to become a portion of a through line to Lake Superior by connecting with the Ontario & Rainy River Ry., now building in Northwestern Ontario. This work cannot be completed this year, but there is reason to believe that it will be finished within two years. The Southeastern is the first railroad for Eastern Manitoba, since the Emerson Branch of the Canadian Pacific Ry. (the first bit of railroad constructed in Manitoba) was built. The portion of this railroad constructed last year extends from Winnipeg southeast 46 miles, and is now being operated. The present end of the road is just about where the forest region begins. This forest extends eastward to the Lake of the Woods. When the road is extended to the Lake of the Woods, or to the Rainy River, it will provide a means of hauling logs from the timber country tributary to those waters to Winnipeg, where saw mills are being built. The charter of the railroad company provides for a special low rate on sawlogs and cordwood to Winnipeg. The Southeastern has not yet secured terminals in Winnipeg. The trains now come into the city on the Canadian Pacific tracks.

The Lake Manitoba & Canal Company's line, popularly known as the "Dauphin road," but now being changed to "Canada Northern," is the youngest line in Manitoba, with the exception of the Southeastern. Some 56 miles of new road north from Sifton Station were built last year and added to the portion now being operated.



Sterlingworth Rolled Steel Freight-Car Truck.

Northern Pacific.—The new railroad work done last year by this company consists of a new branch in the southwestern portion of the province. It starts from the Morris-Brandon Branch of this road, near the town of Belmont, and runs west 46½ miles. The present terminus is a few miles from the town of Hartney.

Canadian Pacific.—The principal work in Manitoba last year was the extension northward 20 miles of the Stonewall Branch. Some work was done in extending the "Pipestone Branch" in Southwestern Manitoba. About 19 miles of new road was graded westward from the present terminus at Reston. The company was not able to get the rails laid before winter set in, consequently this has not yet been operated.

Extensions and Betterments for 1899.

The Canadian Pacific expects to spend between $500,000 and $1,000,000 west of Port Arthur this year. The car shops at Winnipeg will be enlarged, and east of Winnipeg there will be many changes along the line. The more important of these will be replacing wooden bridges. Rat Portage will get a new station, roundhouse and enlarged yards, and about 15 miles of line will be laid with 72-lb. steel to complete this weight of rail between Fort William and Winnipeg. West of Winnipeg many wooden culverts will be replaced with pipe or masonry. The station building at Virden, which was destroyed by fire, will be rebuilt, as will also be done at New Westminster, B. C. Mr. E. Maxwell, architect, of Montreal, is now finishing the plans; also one for a handsome depot at Sicamous. Estimates will be made for double tracking between Fort William and Winnipeg, so as to be ready to go right on with the work as soon as the Board of Directors so decide, which it is expected they will do almost immediately. It is also stated that the Stonewall Branch will be extended to Gimli, on Lake Winnipeg, about 20 miles, with a branch in a westerly direction to Lake Manitoba. The new grade westward from Reston, on the Pipestone Branch, will be extended to completion, and the road will be carried this year to Moose Mountain, about 50 miles west. It will ultimately be extended as far west as Regina.

The Canada Northern (Dauphin road) intends to build as far as the Saskatchewan River, a distance of 120 to 130 miles. This will take the road some distance beyond the boundary of the province of Manitoba and into the territory of the Saskatchewan. There is a prospect that a branch will be built this year westward from a point near the town of Dauphin, to provide railroad facilities for the fine Gilbert Plains agricultural district. A branch of this road, extending westward to the town of Prince Albert, in the Carrot River district, is also projected, which will run through a fine agricultural country.

The Southeastern Ry. will be further extended this year. It is not officially known whether this road will cross the Lake of the Woods at the narrows, or run around the southern end of the lake. The Southeastern this year will be built as far as the eastern boundary of Manitoba, about 75 miles, and possibly it will be completed to the Rainy River, about 125 miles. The immediate object in making this extension is to reach the navigable waters of the Lake of the Woods and the Rainy River, which will give the road a lumber business.

Northern Pacific.—The new branch in Manitoba will probably be completed to the town of Hartney. It is said that this company will do some further building in Manitoba this year, as well as rebuild its burned depot and hotel in Winnipeg, but no official announcement has yet been made.

Northwest Central.—This road must be extended this year, according to the terms of the charter.

Ontario & Rainy River.—The first section of this road, commencing at Stanley Station, on the Port Arthur, Duluth & Western Ry., and extending in a westerly direction a distance of 20 miles, was put under construction last year. There will be much heavy rock work, and this is being carried on this winter on the portion under contract. Five or six parties are employed this winter in locating the road through the Rainy River. It is expected that a portion of the road will be completed this year. This road is expected to form a through line to Lake Superior in connection with the Manitoba and Southeastern before mentioned.

British Columbia.

Crow's Nest Pass Ry.—About the most important railroad work carried on in Canada last year was the building of this line in Southwestern Alberta and Southern British Columbia. A charter was passed by the Parliament of Canada in 1897, and construction began late in July of the same year; early in October last the road was completed to Kootenay Lake, a navigable body of water centrally situated in the rich Kootenay country. The completion of the Crow's Nest Pass Ry. to Kootenay Lake at once brought the great Kootenay country into direct communication with the country to the east. The point where the railroad reaches Kootenay Lake has been named Kootenay Landing. From this point the navigable water is used to reach the

town of Nelson, where connection is made with the Columbia & Kootenay Branch of the Canadian Pacific, built some years ago to provide communication between the navigable waters of the Columbia River and the navigable basin of the Kootenay. From Nelson there is railroad communication through to Robson, Trail and Rossland, making a direct line of communication from east to west Kootenay. These inland navigable waters are very deep and navigation remains open on Kootenay Lake practically all winter.

The Crow's Nest Pass line starts from Sethbridge, a town on the Canadian Pacific system, in the southern portion of Alberta territory, from which point the distance to Kootenay Landing is 28 miles. The cars are transferred down Kootenay Lake to Nelson on barges, so that connection is made right through to Trail without breaking bulk. According to the terms of the charter the company has two years to complete the 60 miles, or thereabouts, of line between Kootenay Lake and the town of Nelson. There is some very heavy work to be done on this portion of the road, and the time allowed may be consumed in building this portion, but ultimately the road will be carried right through to Nelson, so as to avoid the use of barge transfers and the lake as a link in the system.

Besides this work on the Crow's Nest Pass road, the Calgary & McLeod Branch of the Canadian Pacific, in Alberta, was extended south seven miles to connect with the Crow's Nest road. This included a bridge over the Old Man River at McLeod. The Crow's Nest Pass itself is one of the easiest passes of the Rocky Mountains for railroad construction. At the eastern end of the line the company had some heavy work in crossing the deep and wide valley of the St. Mary's River at Sethbridge. The Canadian Pacific Ry. Co. last year purchased the short railroad between Robson and Rossland. This purchase included the Trail smelter. The portion of this line between Trail and Rossland, which is a narrow gage, will be widened at once to standard gage as soon as spring arrives. Coke from coal at the Crow's Nest Mines is used at the Trail smelter and is claimed to be superior to Connellsville.

Boundary Creek.—Another enterprise in Southern British Columbia being pushed forward with great vigor is the railroad from the Columbia River to the Boundary Creek mining district. The Canadian Pacific is also building this road, which starts at Robson, on the Columbia River, which point is also the western terminus of the Columbia & Kootenay road. Thus the Columbia & Kootenay will form a connecting link between the Crow's Nest road and the Columbia & Western. From Robson the Columbia & Western is located in a generally western direction, though, owing to the heavy country, the course is very irregular. During the past year 105 miles, from Robson to Midway, was put under contract, and it is expected the road will be opened for traffic during this spring or early in the summer. The work has been going on actively all winter. The construction of the Columbia & Western means that there will be a through line of railroad by the most direct route, piercing the heart of the famous mineral sections of Southern British Columbia, through East Kootenay by the Crow's Nest road, on through the older mining centers of the Kootenay country by the Columbia & Kootenay road, and thence still onward to the more recent but already famous Boundary Creek country by the Columbia & Western Railway. It is understood that the Canadian Pacific will establish a large smelter at Cascade City, or some other point on the line. The Columbia & Western is projected through to Hope Station, on the main line of the Canadian Pacific. Nothing is being done, however, at present toward building the road west of Midway.

The Canadian Pacific will have some strong competition in Southern British Columbia in the near future with the Great Northern, which is building from Bonner's Ferry, on the boundary line of Idaho, to make a four-mile connection with the Bedlington & Nelson, who are already fighting the Canadian Pacific in the Canadian Parliament for running powers over their line through the Crow's Nest Pass.

Cup-Head Rivets.

It makes a good deal of difference whether a rivet is intended to hold plates together only for the purpose of resisting stress, as in a bridge, or only to make a water-tight joint, as in some shallow tank work, or to make the structure water-tight while holding the members rigidly together, as in boiler, oil-tank and ship work.

Where the object is only to hold the structure together, the cup-head can and should be made considerably steeper on the sides—i. e., fuller, or less flat, than where a tight joint is needed.

Fig. 1 shows a good proportion for making a strong joint. The counter-sink has an angle of 40 deg; the head diameter is 1.52 times the rivet diameter; the total height of the head, not including the counter-sink, one-half rivet diameter; the radius of the flat curve at the top of the head is the rivet diameter, and that of the two sharper curves at the sides of the head section, the rivet radius.

Fig. 2 is for joints that must be both strong and fluid-tight.* The counter-sink angle is, as before, 40 deg.;† head diameter, 1.73 times the rivet diameter, and the single curve radius is that same shank diameter. The head height is the shank radius.

For construction work only a good head is made with the counter-sink one-eighth shank diameter; head height, not including counter-sink, half the shank; head diameter 1½ shank diameter; radii of flat and round curves respectively, one and one-half times the shank diameter. Where a half-flush head (i. e., a thin one with extra counter-sink and flat curve) is called for, then the head and counter-sink may have equal depths, each being one-third shank diameter; the head radius being the shank diameter.

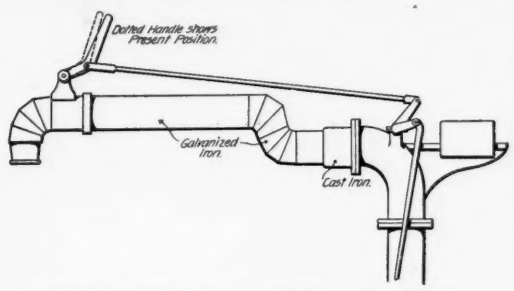
R. G.

* I use the word "fluid" to include liquids, vapors and gases.
† With the shank-axis.

Method of Increasing the Height of Stand-Pipes.

In order to accommodate their powerful locomotives, many railroads have been building tenders of a considerably increased capacity. Others have done so for the purpose of avoiding so many stops at water stations on their fast runs. Within the last two or three years a number of 4,500, 5,000 and 6,000-gallon tanks have been put in service on various lines.

As the dimensions of the tenders are limited in width by the track clearances, and in length by the turntables and roundhouses, the general custom has been to extend their height in order to obtain the desired increase in capacity. This has again caused the necessity of raising the spouts of water tanks and



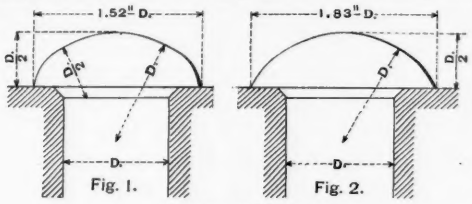
Method of Increasing the Height of Stand-Pipes

stand-pipes, or in other words, increasing the vertical distance between the top of the rails and the end of the spout.

The general method of doing this work on stand-pipes has been to insert an additional piece of vertical pipe between the elbow or head, and the base of the column. This method, however, makes it necessary to also cut the rods connecting the crank at the elbow with the lever which operates the valve, and welding on an additional length of iron on each rod. The cost of making this change averages for the different patterns of stand-pipes in use, from $7 to $10.

On some of the railroads in Northern Germany, where the same demand for increased water capacity on the tenders also has necessitated a change in the height of the stand-pipes, the difficulty has been met in a simple way and at a cost of probably not more than half the price mentioned. The method used is easily understood from the attached cut. The galvanized iron spout is cut off at the cast iron flange, and a double elbow, also of galvanized iron, is riveted to the spout. If the increase in height demanded is not too much, it is not even necessary to cut the rod connecting the operating handle at the end of the spout with the crank at the head, for its position will only be slightly altered, as shown by the dotted lines on the cut.

An extra spout, fitted up with this elbow, can be substituted for the straight spout in a comparatively short time between trains, without interfering with



Cup-Head Rivets.

the use of the stand-pipe, and the straight spout can be taken to the shop and fitted up in the same manner to be used at the next station, thus enabling the work to be done without interrupting the regular train service.

TECHNICAL.

Manufacturing and Business.

The Forged Steel Joint Co., of New York, has been incorporated with a capital of $100,000. The Directors are: Herbert R. Keithley and Murray Carrington, of New York, and M. K. Bowen of Chicago.

The O'Neil Crossing Alarm Co., Cleveland, O., held a meeting, March 22, at the Rookery Building, Chicago, and elected the following directors: Messrs. W. D. Drake, W. P. Johnson, Frank Higley, J. T. Gardner and A. L. Dunbar.

We are informed by the American Equipment Co., Kansas City, Kan., that on April 1, it will mail specifications for necessary materials for building 67 miles of electric railroad to be operated by the storage battery system. (See Electric Railroad Construction column.)

The North Carolina Car Co., of Raleigh, N. C., has filed a deed of trust with Ed. Chambers Smith and Chas. H. Belvin of Raleigh as trustees. The principal debt is one due the National Bank of Raleigh amounting to $18,580.25.

The Erie Construction Co. has been incorporated in New Jersey with a capital stock of $100,000 to carry on the business of general contractors for building steam and electric railroads, bridges, tunnels, subways, etc. The incorporators are: W. B. Strang, Jr., Chas. E. N. Coles and Chas. N. King. The company has an office at 243 Washington street, Jersey City.

Articles of incorporation have been filed in Rhode Island for the Providence Engineering Works. The company has been organized to build, buy and sell steam engines and machinery. The capital stock is $250,000.

Merchant & Co., Inc., Philadelphia, have recently received an order from the War Department for 786 galvanized Star ventilators for use on the officers' quarters and barracks to be built at Havana and Matanzas, Cuba. Within the last few months this company has supplied 500 ventilators for the new government hospitals at Fortress Monroe and Savannah.

S. H. Wheelhouse, formerly with the M. M. Buck Mfg. Co., has been appointed southwestern agent of the Corning Brake Shoe Co., with office at 409 North Fourth street, St. Louis, Mo.

Articles of incorporation have been filed in New Jersey for the International Steam Pump Co. The capital stock is $27,500,000, of which $12,500,000 is six per cent. preferred.

The Pennsylvania will use seamless cold drawn steel boiler tubes made by the Shelby Steel Tube Co. in the water tube boilers for the ferry-boat "Philadelphia" now being built. This is the second boat built for the railroad in which these boiler tubes have been used.

Henry D. Kyle General Manager of the Universal Car Bearing Co., was elected a Director of the Brady Brass Co. at its annual meeting held on March 23.

Iron and Steel.

Foundations are being built for two steel furnaces for Worth Bros. & Co., Coatesville, Pa.

William C. Colburn, President of the Detroit Bridge & Iron Works, died of paralysis in Detroit, March 12, aged 62 years.

A new corporation, to be known as the Bethlehem Steel Co., is being organized for the purpose of absorbing the Bethlehem Iron Co. It is stated that the plan is similar to that by which the Cambria Steel Co. absorbed the Cambria Iron Co.

The organization of the United States Cast Iron Pipe Co. has been completed and the company has formally assumed control of its properties. The capital is $30,000,000, divided equally between common and preferred stock. The following have been elected Directors: Colgate Hoyt, A. C. Overholt, B. F. Overholt L. R. Lemoine, Geo. B. Hayes, C. E. Nurke, E. C. Fuller, W. C. Proctor, B. F. Haughton, Geo. J. Long, A. F. Callahan and F. C. Miller. The officers are: President, A. C. Overholt; Vice-President, A. F. Callahan; Secretary, B. F. Haughton; Treasurer, Geo. B. Hayes.

The Engineer (London) says that the Victorian Government has accepted the tender of the Pennsylvania Steel Co., and the Maryland Steel Co. for the supply of 35,000 tons of rails and fish plates, the prices being £4 18s. 6d. a ton for rails and £8 5s. a ton for fish plates. For the total orders the price was £15,283 below the English tenders.

New Stations and Shops.

The Chicago, Rock Island & Pacific has recently bought 40 acres of land for $180,000, on the Calumet River, South Chicago. We are officially informed that there is no truth in the report that the Chicago shops of the road will be removed to this location and that the land was bought for dock purposes.

Interlocking.

The State Railroad Commissioner of Ohio has ordered interlocking signals at the intersection of the Cincinnati Northern and the Baltimore & Ohio at Defiance. The same officer has ordered interlocking signals at the crossing of the Baltimore & Ohio and the Toledo, St. Louis & Kansas City at Holgate. The Baltimore & Ohio is to build and operate the plants at both places. It is said that interlocking signals are also to be put in at the crossing of the Cincinnati Northern and the Detroit, Lima & Milwaukee at Rimer.

Block Signaling on the Atlantic Coast Line.

The Atlantic Coast Line is to introduce the telegraph block system on its line between Rocky Mount, N. C., and Petersburg, Va. The additional apparatus that was needed has already been purchased. When this installation is put in use, the block system will be in force from Rocky Mount northward to Richmond, 122 miles.

Mr. Cloud and the Associations.

Mr. John W. Cloud, who is now General Western Agent of the Westinghouse Air Brake Co., and who is also the Secretary of the Master Car Builders' Association and the Master Mechanics' Association, will shortly leave all of those positions and go to London. There he will take up the duties of Vice-President and General Manager of the Westinghouse Brake Company, Limited. This company controls the Westinghouse brake business everywhere outside of the American continent, and has long been man-

aged in London by Mr. Albert Kapteyn. We have not been informed as to what change will be made in Mr. Kapteyn's duties. Mr. Cloud is expected to sail from New York April 26 and to return in time to attend the June conventions of the two associations. After that, however, he will, as a matter of course, give up his secretaryships. We need hardly say that Mr. Cloud has conducted the affairs of the associations with singular ability, efficiency and dignity. While it is a common saying that no man is indispensable, yet we cannot think of any man in America who can precisely replace Mr. Cloud in these relations. Of course, his work as a mechanical engineer and as a business man, in which also he long ago won for himself a high place, will not cease now. He merely changes his field.

Dredging of Channels in New York Harbor.

Sealed proposals for the improvement of channels in New York Harbor authorized by the recent act of Congress, will be opened April 24 and 26, the former date being for the proposals for dredging the East Channel at the entrance to New York Harbor and the latter date for the improvements in the Bay Ridge and Red Hook channels. The Bay Ridge dredging provides for deepening the Red Hook channels to 40 ft. at mean low water and 1,200 ft. wide along the specified channel near the Erie Basin bulkhead. Some work has recently been done on the Bay Ridge Channel, and the present depths in the area to be dredged range from 10 to 40 ft. at mean low water. The contractor must begin work within 30 days from the date of approval of contract. The East Channel is to be made 2,000 ft. wide and 40 ft. deep at mean low water throughout its entire length between the main channel and the sea, where the present depths range from 16 to 40 ft. The amount of money now available for payments for excavation under the contract is $950,000.

THE SCRAP HEAP.

Notes.

The Michigan Legislature has passed a bill empowering the city of Detroit to buy all of the street railroads in that city.

The Boston & Albany on April 1 will resume the practice of charging 10 cents higher prices where passenger fares are paid in the cars, the conductor giving a rebate check. The 10-cent excess and the rebate were abandoned several months ago, when it was believed that the rebate check would have to be stamped under the war revenue law.

Ohio papers state that the principal offices of the Pennsylvania on the lines west of Pittsburg are to be connected by long distance telephones. Metallic circuits, for the exclusive use of the railroad company, are to be put up. The Pennsylvania already has an elaborate telephone system connecting the six or eight principal cities on its lines east of Pittsburg.

The story of the mysterious derailment near Anoka Junction, Ind., published last week, page 214, proves to be a lie; and the Alton road continues to have the "exclusive" distinction of derailing a car without knowing it. We regret that the Railroad Gazette had an "exclusive" on the lie. We are so near the yellow journals that the evil atmosphere appears to have partially asphyxiated the editorial brains. Indulgent readers will, perhaps, therefore pardon us for not being more vigilantly on guard against "stories" masquerading as reports; but we are sorry thus to have thrown a shadow on the true report of the Prentice accident.

The Norfolk & Western has been fined $250 at West Appomattox, Va., for running five freight trains through the town on Sunday.

The trainmen of the Midland Division of the New York, New Haven & Hartford, formerly the New England Railroad, have had their pay made uniform with that of men doing similar work on the other lines of the company.

The eastbound fast mail trains of the New York Central and of the Pennsylvania have had their time shortened so that they arrive in New York between three and four o'clock in the morning thus enabling the post-office to deliver letters by the first carriers. The trains now run through from Chicago in 24 hours.

A bill has been introduced in the New Jersey Legislature permitting the use of the trolley tracks of the city of Newark for transferring freight cars from steam railroads direct to the yards of establishments of manufacturers. The arrangement of new tracks to connect manufacturing establishments will be under the direct supervision of the Board of Streets & Water Commissioners. All shifting of freight cars would under the proposed plan, be done between one and five o'clock in the morning so as not to interfere with the regular passenger service of the trolley roads.

The Telegraph Too Slow.

The new fast express-train service recently inaugurated between Pittsburgh and New York that leaves Pittsburgh late in the evening, is absorbing the bulk of the half-rate telegrams which formerly made quite an item in the receipts of the two telegraph companies. The train reaches New York early next morning.—The Weekly Railroad Press (New York).

Chicago Drainage Canal.

On sections 17 and 18 of the Drainage Canal the contractors have about 2,000 men at work day and night, and satisfactory progress is being made. It is expected that alterations in dams and locks in the old Illinois & Michigan Canal will be finished before the opening of navigation. Work on the unfinished sections of the new canal is now so well advanced that the outlook for its completion by next fall is favorable.

Preliminary Training for Locomotive Firemen.

At the locomotive shops of the Philadelphia & Reading, at Reading, Pa., 12 young men are to be employed in the erecting shop, with a view to keeping them in the erecting gang for about one year and then putting them on locomotives as firemen. It is expected that in the shop work they will acquire a good deal of knowledge about an engine which will be useful to them when they become runners. They will, of course, have to pass the usual examination for the position of fireman.

Misuse of Spirits.

At the instance of a local society, the railroad authorities have established in the Heidelberg station what we would call a temperance coffee house, especially for the benefit of the railroad employees, to avoid the temptation to drink afforded by the regular station buffets, established primarily for passengers. That this should be done at the very home of the mighty Heidelberg wine cask is sufficiently notable, but perhaps not so much so as the name of the society itself—the "Society Against the Misuse of Spirituous Drinks."

The Mere Persistence of Things.

Scene, a station on the main line of the East Indian Railway. A train from Delhi stops; a tester is going around with his hammer striking the wheels. To him an officer of Royal Engineers, who has been watching him from a carriage window, said:

"Why do you beat the wheels like that?"

Answer—"Sirkarka hookum," ("It is the order of the authority.")

E. O.—"But what is the use of so striking the wheels?"

Answer—"God knows! I have been doing this for 30 years; it is the order of the authority."—Transport.

Prizes for Agents on the Atchison.

The Atchison, Topeka & Santa Fe has just awarded prizes to station agents for their efforts to increase freight traffic during the past year. According to the Topeka Capital the awards were as follows:

First prize, $250, to C. A. Walker, McPherson, Kan. Second prize, $200, to C. H. Hobart, agent Redlands, Cal. Third prize, $150, to W. B. Slack, agent Weatherford, Tex. Fourth prize, $125, to W. H. McCune, agent Fort Madison, Ia. Fifth prize, $100, to J. B. Shine, agent Farmersville, Tex. Sixth prize, $75, to O. H. Burke, agent Orange, Cal. Seventh prize, $60, to C. B. Young, agent Chanute, Kan. Eighth prize, $40, to W. W. Arnold, agent Sterling, Kan.

The Double-Speed Sidewalk at the Paris Exposition.

It is probaly pretty well known that a double-speed walk or platform is to be installed at the Paris Exposition of 1900, something on the lines of the one which Mr. Max Schmidt and his associates installed at the Chicago Fair. The Electric Transport Co. of the Exposition has informed its stockholders that conclusive experiments have been made with the electric platform by the commissioners of the Exposition, and the concession has been made definitively. In consequence, it is decided to make the capital of the company four million francs and subscriptions were opened Feb. 10 and closed Feb. 28.

A Successful Application of Wireless Telegraphy.

A successful series of experiments has been made in establishing communication between the South Foreland light house on the English coast and the East Goodwin lightship by Marconi's methods of wireless telegraphy. Although the two places are 12 miles apart, questions from the Foreland were answered almost as quickly as in conversation, and it has ascertained that the current is not affected by stormy weather. This successful trial is of considerable importance, as rapid communication between the shore and the Goodwin is important in time of shipwrecks or in an emergency, and the telephone when tried with the light ships was found to be liable to a break down in stormy weather.

Wheat from Siberia.

In Siberia, where roads are bad, the winter is favorable for transportation, as then the swamps are frozen and there is good sleighing on bad roads. The residents take advantage of it to market any produce they may have, and now this produce goes largely to the Siberian Railroad. One of the results this year was that before the end of January this railroad had brought to its western terminus about 3,000,000 bushels of wheat, which its sole western connection had been unable to forward into European Russia, probably being kept busy with its own local traffic. When navigation opens, probably a large part of this will be taken to the Volga crossing and forwarded thence by river, just as grain accumulates at our lake ports in the winter to be forwarded when navigation opens.

Technical Schools.

University of Illinois.—The University of Illinois announces that a course in railroad engineering will be added and work in the new department and will commence next September. The work will be under the supervision of Prof. L. P. Breckenridge, but directly in charge of a railroad specialist who will shortly be appointed. The course of study laid out follows the same lines as that of the regular course in mechanical engineering for the first three years, but during the fourth year specialization begins in both the draughting room and the laboratory. The subjects studied include the following: The constructive features of different types of locomotives and their design; lectures and readings on different shop systems; locomotive road tests; compressed air as used about railroad shops and to operate the brakes of cars and locomotives; a study of the costs of materials and repairs; the forms of specifications of supplies and the costs of operating machinery departments; the design of rolling stock, shops, turntables, and different kinds of pumps; dynamometer car tests under actual conditions; tests of stationary plants at railroad shops and the sampling of fuels, boiler waters, oils, varnishes, paints and railroad supplies for test and analysis.

Arrangements have been made with the roads entering Champaign for tests of locomotives in which the dynamometer car owned jointly by the University of Illinois and the Peoria & Eastern will be used. These roads also have air brake instruction cars which at times are available for students. Visits to railroad shops are also included in the course.

Rensselaer Polytechnic.—An interesting and valuable lecture on "Riveted Steel Pipe" was delivered before the students of the Rensselaer Polytechnic Institute at Troy, New York, Wednesday, March 22, by Mr. E. Kuichling, Chief Engineer of the Water Department of Rochester.

North Central Association of Colleges and Secondary Schools.—This association was formed for the purpose of

This association was formed for the purpose of more closely identifying the work of secondary schools and colleges of the eleven north central States, and is one of four similar associations in the country east of the Rocky Mountains. As noted on p. 215 of last week's issue, the fourth annual meeting of the association will be held in Chicago, March 31-April 1. Mr. A. F. Nightingale, of Chicago, is President, and the membership consists of universities, colleges and secondary schools. Among the officers are two Vice-Presidents from each of the eleven States. The programme for this meeting consists of a first resolution regarding the efficiency of the public schools in cities on which President A. S. Draper, of the University of Illinois, has a paper; a second resolution favoring the establishment of commercial high schools to furnish more satisfactory training for those who expect to enter business careers at the end of such course, the paper on this subject to be by Prof. Edmund J. James, of the University of Chicago. The third resolution favors the establishment of schools of commerce in connection with our colleges and universities in order to furnish satisfactory training for those who wish to enter business careers after leaving college, the paper on this subject to be by Prof. F. C. Clark, of the University of Ohio. The fourth resolution declares that the manufacturing interests demand a secondary school training more extended than that given in manual training schools and better suited to the purpose than that given in our engineering schools; and the fifth resolution affirms: "That the interests of the individual and of the profession demand that the work of our engineering schools should be predicated upon a full four years' literary and scientific college course, with suitable electives so as to complete the professional course in two years." The paper on the two last resolutions will be by Prof. J. B. Johnson, Dean of the Engineering Faculty of the University of Wisconsin, with a discussion by Prof. Clarence A. Waldo, of Purdue University.

LOCOMOTIVE BUILDING.

It is reported that the Washington County will buy two locomotives.

We are informed that the Ohio Central will not order engines, as reported.

The Schenectady Locomotive Works are building one engine for the Mexican International.

The Rogers Locomotive Co. has received an order to build one engine for the Minnesota Transfer.

The Muncie Belt has ordered one six-wheel switching engine from the Baldwin Locomotive Works.

The New York, Ontario & Western has ordered one locomotive from the Cooke Locomotive & Machine Works.

Three engines will be ordered by the Cumberland Construction Co., of St. Louis, Mo., for the Tennessee Central.

The Columbus, Hocking Valley & Toledo has ordered 10 locomotives from the Pittsburgh Locomotive & Car Works and five from the Baldwin Locomotive Works.

The Boston & Maine has ordered six compound freight engines from the Schenectady Locomotive Works and six switching engines from the Manchester Locomotive Works.

It is understood that the Chicago, Lake Shore & Eastern will order more locomotives in the near future in addition to the two switching engines noted in our issue of last week.

The Delaware, Lackawanna & Western has ordered 20 12-wheel freight engines, five from the Dickson Locomotive Works and 15 from the Brooks Locomotive Works. They will have wide fireboxes, 22 in. x 30 in. cylinders and 54 in. driving wheels and will be the first engines of that type to be used on the D., L. & W.

In our last issue we said that the Schenectady Locomotive Works had received an order for eight engines for the Paris & Orleans Railroad of France. We are now informed that these are electric locomotives, parts of which they are building for the General Electric Co., which company has the order to furnish the electric locomotives for the road named. They are for the extension within the city of Paris.

According to a statement issued by the Baltimore & Ohio, a number of the 45 compound consolidation freight locomotives, recently ordered from the Baldwin Locomotive Works for use on the southwestern division of the road are in service and are giving splendid satisfaction. On the Mississippi division they have increased the train haul 40 per cent. over the old line. The compound 10-wheel passenger engines have developed unexpected pulling power and high speed.

The three locomotives ordered by the Kanawha & Michigan from the Baldwin Locomotive Works, and noted in our issue last week, are simple mogul engines, for October delivery. They will have cylinders, 17½ in. x 24 in.; drivers 54 in. in diam.; total weight, 117,000 lbs., with 96,000 lbs. on drivers; extended wagon top boilers; working steam pressure, 180 lbs.; fireboxes, 70⅝ in. x 34¼ in.; tank capacity for water, 3,500 gals. They will be equipped with Westinghouse air-brakes, steel axles, Sterlingworth brake beams, Tower couplers, Sellers' injectors, Houston sanding devices, Detroit lubricators, Standard steel tires, cast iron wheel centers, American Steel Foundry Co.'s steel bolsters for tenders and Keasbey & Mattison magnesia lagging.

The 12 locomotives ordered by the Minneapolis & St. Louis from the Schenectady Locomotive Works as noted in our issue of last week, will be simple 10-wheel engines for August and September delivery. They will have cylinders 20 in. x 26 in. and will weigh 150,000 lbs. The boilers will be of the extended wagon top type; working steam pressure 200 lbs., and tank capacity for water 5,000 gals. The specifications call for Westinghouse-American air brakes; Cambria axles; Cook & Strong bell ringers; Sterlingworth brake beams; Lappin brake shoes; Leeds reversible couplers; Rochester headlights; Ohio and Monitor injectors; metallic piston and valve rod packings; Ashton safety valves and steam gages; Houston sanding devices; Nathan special sight-feed lubricators; A. French Spring Co's springs; Taafel regulators for the steam heat equipment; McKee-Fuller truck and tender wheels and east steel wheel centres. The driving wheel tires will be of different makes.

CAR BUILDING.

The Toledo & Ohio Central is in the market for 500 box cars.

The Raleigh & Western will order within the next 30 or 60 days 300 freight cars.

We understand that the St. Paul & Duluth will order some box cars; probably 300.

The Southern Pacific has ordered six more dining cars from Pullman's Palace Car Co.

Pullman's Palace Car Co. is building 50 freight cars for the Portland & Rumford Falls.

The Allison Mfg. Co. is building 50 cars for the Westmoreland Coal Co., of Philadelphia, Pa.

We are reliably, but not officially, informed that the Chicago & Northwestern will soon order several hundred cars.

It is reported that the Directors of the Washington County have authorized the buying of eight passenger cars.

The Cumberland Construction Co., of St. Louis, Mo., will probably order 155 freight cars of 80,000 lbs. capacity, for the Tennessee Central.

The Chicago Terminal Transfer Co. has ordered from the Illinois Car & Equipment Co., 100 of the 40-ton gondola cars mentioned in our issue of March 3.

We understand that the Chicago, Milwaukee & St. Paul will build during the year at its West Milwaukee shops 5,000 freight cars against 3,000 turned out last year.

The Louisville, Henderson & St. Louis has contracted with the American Car & Foundry Co. for 1,000 freight cars, to be built at the works of the Ohio Falls Car Mfg. Co.

In reference to the report recently published that the Lake Shore & Michigan Southern will order some box cars of 80,000, lbs. capacity, we are officially informed that it is incorrect.

The Mexico, Cuernavaca & Pacific has placed an order with the American Car & Foundry Co. for 40 freight cars. They will be built at the works of the Missouri Car & Foundry Co.

We are officially informed that the Minneapolis & St. Louis has prepared plans and asked builders for suggestions and designs on 10 54-ft. passenger coaches and three 56-ft. mail and express cars.

The Pennsylvania Railroad has ordered 510 box cars of 80,000 lbs. capacity from the American Car & Foundry Co. They will have Westinghouse brakes, Janney couplers and P. R. R. standard trucks.

The Columbus, Hocking Valley & Toledo has ordered 2,000 80,000-lbs. capacity coal cars, 1,000 from the Michigan-Peninsular Car Co., and 1,000 from the Barney & Smith Car Co. They will have Simplex body and truck bolsters, Monarch brake beams, Buckeye couplers and New York air brakes. The road has also ordered 500 cars of the same class from Pullman's Palace Car Co.

The 2,000 cars for the Missouri, Kansas & Texas, noted in recent issues have been ordered from the American Car & Foundry Co. The 1,400 box cars will be built by the Missouri Car & Foundry Co. and the 300 furniture, 200 coal and 100 refrigerator cars by the St. Charles Car Co. Of the box cars 600 will have Barber trucks and Bettendorf body bolsters; 600 will have American Steel Foundry Co.'s trucks and body bolsters, which will also be used on the 200 coal cars; and 200 of the box cars will have Simplex body and truck bolsters. The 300 furniture and 100 refrigerator cars will have Shickle, Harrison & Howard truck and body bolsters, Buckeye couplers, malleable iron journal boxes made by the Missouri Malleable Iron Co., Sterlingworth brake beams, McGuire grain doors and Security outside doors, Chicago roofs, and Western Supply Co.'s draft rigging and Chicago roofs will be used.

The Fort Smith Traction, Light & Power Co. of Fort Smith, Ark., has ordered five closed cars from the American Car Co.

The Meadville Traction Co., Meadville, Pa., has ordered some open cars from the Jewett Car & Planing Mill Co. of Jewett, O.

The Mount Pleasant, Scottdale & Connellsville Electric Ry., Scottdale, Pa., wants bids at once for building 10 closed motor cars and eight closed trailer cars. W. W. Staub of Pittsburgh Pa., is General Manager. (See Electric Railroad Construction column.)

The Brooklyn Heights has ordered 200 closed car bodies; 75 from the Laconia Car Co., 25 from the Briggs Carriage Co. of Amesbury, Mass., and 50 each from the St. Louis Car Co. and Laclede Car Co. They are to be built from specifications of the Brooklyn Heights standard 25 ft. closed car bodies.

The American Equipment Co. of Kansas City, Kan., informs us that on April 1 they will issue specifications for materials for building 67 miles of electric railroad, to be operated by the storage battery system, which, we understand, will include the equipment. (See Electric Railroad Construction column.)

BRIDGE BUILDING.

ALLENTOWN, PA.—Walter G. Berg, Engineer of Way of the Lehigh Valley RR., has asked the City Council to decide the location of the proposed new bridges at Seventh St., and Summit Ave., over the Lehigh Valley's west end branch.

ATKINSON, NEB.—The Atkinson & Northern RR., now under construction from Atkinson to Perry, Neb., will build a bridge over the Niobrara River. Don J. Barnes, Atkinson.

BARKER, N. Y.—Plans are being considered by the Town Council for a bridge across the Chenango River, estimated to cost $10,000. David B. King is a member of the Council.

BOSTON, MASS.—The Boston Terminal Co. has notified the Boston Street Commissioners that the company has no objection to the building of the Atlantic Ave. extension, connecting with South Boston, over the tracks of the railroad company, which requires a highway bridge at a cost of about $5,000,000.

BRADFORD, PA.—The City Engineer has submitted estimates for steel bridges for Forman St. and Washington St. extension. One is estimated to cost $3,032, and the other $5,062.

BUFORD, GA.—The iron bridge across the Chattahoochee River, between Buford and Cumming, was washed away by high water March 16. The bridge was built about four years ago, at a cost of $7,000.

CHATTANOOGA, TENN.—The county steel bridge across the Chickamauga Creek at Lightfoot's Mill was recently carried away by high water.

CHILLICOTHE, O.—The Chillicothe, Bainbridge & Hillsboro Electric RR., recently incorporated, will need several bridges on the proposed road. T. C. Jeffries, Columbus, O., is President. (See Electric Railroad Construction column.)

COLUMBUS, O.—Plans are being considered for a bridge for the Columbus & Buckeye Lake St. Ry. (See Electric Railroad Construction column.)

DETROIT, MICH.—The Board of Public Works has asked the City Council for an appropriation for repairs of bridges as follows:

Repairs in general:	
Walnut St. Bridge	$1,500
Grand Ave. Bridge	1,145
West Ninth St. Bridge	1,140
Court Ave. Bridge	1,500
Locust St. Bridge	1,110
West Eighteenth St. Bridge	2,000
Total	$8,425

In addition to the foregoing, there will be further sums required for absolutely necessary repairs, as follows:

For rebuilding west abutment of the Wanut St. Bridge, reflooring and repaving the same	$4,400
For rebuilding south abutment of the Ninth St. Bridge and reflooring the same	2,000
For reflooring portion of Eighteenth St. Bridge	200
Total	$6,600

GEORGETOWN, MASS.—The Georgetown Rowley & Ipswich St. Ry. will need a bridge at a railroad crossing. (See Electric Railroad Construction column.)

HARTFORD, CONN.—The Connecticut River Bridge and Highway District Commissioners have decided to build a new bridge on Hartford Ave., in East Hartford, to take the place of the structure now in use. Bids are wanted until April 15 on two plans. One, a stone arch bridge, will have nine spans, each of 40 ft.; the second is a steel bridge of eight spans, each of 40 ft. The entire structure will be about 400 ft. long and 66 ft. wide.

HOLYOKE, MASS.—The Board of Aldermen has requested a report on the old bridge on Main St., which is considered unsafe.

JOHNSTOWN, N. Y.—The matter of the West Main St. grade crossing is again before the Town Council. A resolution has been introduced to require the F. J. & G. RR. to build a viaduct over the tracks.

JOLIET, ILL.—The Sanitary District drainage trustees have voted $22,500 to the Chicago, Rock Island & Pacific RR. for a bridge across the drainage canal at Joliet.

MT. VERNON, N. Y.—The Aldermen, at a meeting March 21, decided to widen the Third St. bridge over the Hutchinson River, which connects Mt. Vernon with the town of Pelham.

NEW WHATCOM, WASH.—Alex. Van Wyck, Clerk of the Board of County Commissioners, will receive bids until April 5 for building a combination highway bridge of 120 ft. span, on pile piers, over the south fork of Nooksack River, near Van Zandt. The contractors are to supply all material except the piles, which will be delivered by the county.

NEW YORK, N. Y.—A bill has been introduced in the Legislature by Senator Ford, extending the time for building the bridge across the East River by the New York Connecting Ry. Co., to Jan. 1, 1900. This company has already secured estimates on the work which amount to $4,000,000. (Jan. 6, p. 13.)

The New York Central & Hudson River RR., according to report, will build a new bridge at Spuyten Duyvil, and plans are now being prepared in the Maintenance of Way Department by W. J. Wilgus, Engineer.

A bill has been introduced in the Legislature by Henry A. Ball, providing for a bridge over the Mill Pond at Utica Ave., in Flatlands, to cost $12,000, the expense to be equally charged upon the 31st and 32d Wards.

OAKLAND, CAL.—Frank C. Jordan, Clerk of the Board of Supervisors, will receive bids until April 10 for building a trestle bridge over Arroyo Mocho Creek on county road No. 2,996.

PHILADELPHIA, PA.—A bridge 160 ft. long and 12 ft. wide will be built across Delaware Ave., at the foot of Chestnut St., to connect with the upper deck of a pier now being built.

PITTSBURGH, PA.—Director E. M. Bigelow of the Department of Public Works, has applied for funds to build a bridge at Wilmot St., to afford access to Shenley Park. Plans have been prepared and submitted to the War Department for the new bridge to be built across the river at Tenth St.

The North Braddock Council has accepted the plans of the Monongahela Traction Co. for a bridge over the Sixth St. hollow. The bridge will be 200 ft. long, and is estimated to cost between $10,000 and $12,000. S. A. Taylor, Borough Engineer.

SEATTLE, WASH.—Two bridges are necessary for the Seattle & Tacoma Electric RR.; one over the Puyallup River and the other over the White River. Both will be draw bridges. Henry Bucey, Seattle, promoter. (See Electric Railroad Construction column.)

A bridge is proposed over the Snoqualmie River at Novelty. This bridge will be 225 ft., and plans have been prepared by the County Surveyor.

SEWELL, W. VA.—The bridge which was built in 1897 at a cost of $14,000 across the New River, at Sewell, was recently swept away by high water.

SCOTTDALE, PA.—The Mt. Pleasant, Scottdale & Cornellsville Electric Ry. will need some bridge work on the proposed road, and bids will be asked at once. (See Electric Railroad Construction column.)

SHELBURNE FALLS, N. Y.—The Shelburne Falls & Colraine St. Ry. Co. will soon build a bridge for a proposed extension. (See Electric Railroad Construction column.)

SHELBYVILLE, TENN.—A committee consisting of T. F. Smalling, C. L. Cooper and others, appointed by the County Court, will recommend to the April term of the Court that bridges be built at Hall's Mill, Simonsford, Normandy, and another east of Wartrace, at Garrison Fork.

STILLWATER, MINN.—Plans are being prepared for a railroad bridge by the Wisconsin Central.

WAYCROSS, GA.—The County Commissioners are considering the advisability of building new bridges: One across Big Creek, which is to be 375 ft.; another across the slue on the north side of Satilla River, 860 ft. long; another at Arnold Ferry, across Satilla River, of 150 ft., and a fourth across Kettle Creek, which will be about 400 ft.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Cincinnati, Hamilton & Dayton.—Quarterly, preferred, A. & B., 1 per cent., payable April 4.

Dayton & Michigan.—Quarterly, preferred, 2 per cent., payable April 4; common, 1¾ per cent., payable April 1.

Norfolk & Southern.—Quarterly, 1 per cent., payable April 10.

Peoria, Decatur & Evansville.—Semi-annual, 5 per cent., payable April 1.

Pittsburgh, Wheeling and Kentucky.—Semi-annual, 3 per cent., payable April 1.

Utica & Black River.—Semi-annual, 3½ per cent., payable March 30.

Wilmington & Weldon.—Semi-annual, 3½ per cent.

Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows:

American Railway Association.—Will hold its spring meeting at the Hotel Cadillac, Detroit, Mich., on Wednesday, Apr. 12.

American Society of Civil Engineers.—Meets at the house of the Society, 220 West Fifty-seventh street, New York, on the first and third Wednesdays in each month, at 8 p. m.

Association of Engineers of Virginia.—Holds its formal meetings on the third Wednesday of each month from September to May, inclusive, at 710 Terry Building, Roanoke, at 5 p. m.

Boston Society of Civil Engineers.—Meets at 715 Tremont Temple, Boston, on the third Wednesday in each month at 7.30 p. m.

Canadian Society of Civil Engineers.—Meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday at 8 p. m.

Central Railway Club.—Meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March, May, September and November, at 2 p. m.

Chicago Electrical Association.—Meets at Room 1737, Monadnock Building, Chicago, on the first and third Fridays of each month at 8 p. m. J. R. Cravath, Secretary.

Civil Engineers' Club of Cleveland.—Meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.

Civil Engineers' Society of St. Paul.—Meets on the first Monday of each month except June, July, August and September.

Denver Society of Civil Engineers.—Meets at 3 Jacobson Block, Denver, Col., on the second Tuesday of each month, except during July and August.

Engineers' Club of Cincinnati.—Meets at the rooms of the Literary Club, 25 East Eighth street, on the third Tuesday of each month, excepting July and August, at 6.30 p. m.

Engineers' Club of Columbus, (O.)—Meets at 12½ North High street on the first and third Saturdays from September to June.

Engineers' Club of Minneapolis.—Meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.

Engineers' Club of Philadelphia.—Meets at the house of the Club, 1122 Girard street, Philadelphia, on the first and third Saturdays of each month at 8 p. m., except during July and August.

Engineers' Club of St. Louis.—Meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

Engineers' Society of Western New York.—Holds regular meetings on the first Monday in each month, except in the months of July and August, at the Buffalo Library Building.

Engineers' Society of Western Pennsylvania.—Meets at 410 Penn avenue, Pittsburg, Pa., on the third Tuesday in each month at 7.30 p. m.

Locomotive Foremen's Club.—Meets every second Tuesday in the club room of the Correspondence School of Locomotive Engineers and Firemen, 335 Dearborn street, Chicago.

Montana Society of Civil Engineers.—Meets at Helena, Mont., on the third Saturday in each month at 7.30 p. m.

New England Railroad Club.—Meets at Pierce Hall, Copley Square, Boston, Mass., on the second Tuesday of each month.

New York Railroad Club.—Meets at 12 West Thirty-

first street, New York City, on the third Thursday in each month at 8 p. m., excepting June, July and August.

Northwest Railway Club.—Meets on the first Tuesday after the second Monday in each month at 8 p. m., the place of meeting alternating between the West Hotel, Minneapolis, and the Ryan Hotel, St. Paul.

Northwestern Track and Bridge Association.—Meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2.30 p. m.

St. Louis Railway Club.—Holds its regular meeting on the second Friday of each month at 3 p. m.

Southern and Southwestern Railway Club.—Meets at the Kimball House, Atlanta, Ga., on the second Thursday in January, April, August and November.

Technical Society of the Pacific Coast.—Meets at its rooms, in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

Western Foundrymen's Association.—Meets in the Great Northern Hotel, Chicago, on the third Wednesdays of eash month. A. Sorge, Jr., 1533 Marquette Building, Chicago, is Secretary.

Engineers' Club of Philadelphia.

A business meeting of the club will be held on Saturday, April 1, 1899, at 8 o'clock p. m. The papers will be, "A Few Remarks on the Testing Laboratory of the City of Philadelphia," (illustrated), by Richard L. Humphrey, and "Notes on Recent Developments in Electrical Engineering," by Carl Hering.

British Iron & Steel Institute.

The annual meeting of the Institute will be held in London May 4 and 5, at the Institution of Civil Engineers. The President-elect is Sir William Roberts-Austen, K. C. B. Papers have been promised by Prof. Arnold, Sheffield; Mr. Bauerman, London; Mr. Disdier, Bilboa; Messrs. Jeremiah and A. P. Head, London; Baron von Jüptner, Vienna; Prof. Louis, Newcastle; Mr. Summers, Chicago, and Prof. Wiborgh, Stockholm.

Franklin Institute.

March 28, 8 p. m.—Meeting of the electrical section; "railroad" meeting. This meeting will be devoted to the subject of electrical railways, and particularly to the discussion of papers of Messrs. Frank J. Sprague, Albert B. Herrick and Edward E. Higgins, of New York. Members will receive printed copies of the papers in advance for the purpose. Those intending to participate in the discussion are requested to inform the secretary of the fact.

April 12, 8 p. m.—Stated meeting of the mining and metallurgical section. Paper of the evening: "Riddles Wrought in Iron and Steel." Mr. Paul Kreuzpointner, Testing Department, Pennsylvania Railroad Company, Altoona, Pa.

American Railway Association.

The spring meeting of this Association will be held at the Hotel Cadillac, Detroit, Mich., on Wednesday, April 12, at 11 a. m. Reports will be presented by the Executive Committee and the Committees on Train Rules, Car Service, Safety Appliances, Interlocking and Block Signals, on the Metric System, and on the Revision of the Rules of Order. The annual election of officers will take place at this meeting. Two members of the Executive Committee and three members of the Committee on Train Rules will also be elected.

According to the rules of order as amended at the October meeting, a company may be represented at the meetings of the association by "any official thereof."

The Civil Engineers' Club of Cleveland.

At the annual meeting, held March 14, the following officers were elected: Col. Jared A. Smith, U. S. A., President; Prof. John W. Langley, Vice-President; Arthur A. Skeels, Secretary; John N. Coffin, Treasurer; Wm. E. Reed, Librarian; Jos. R. Oldham, director; Wm. B. Hanlon, director.

The annual reports showed a slight falling off in membership, but an excellent condition of the funds of the Club.

A report of the Committee on Federation of the Club with other scientific societies of Cleveland was adopted.

The retiring president delivered an address on the past history of the Club, with some suggestions as to its future.

Engineers' Society of Western Pennsylvania.

The 192d monthly meeting of the Engineers' Society of Western Pennsylvania was held in the lecture room of the Society's House, No. 410 Penn Ave., Pittsburgh, Pa., Tuesday evening, March 21.

The Committee on the Abatement of Smoke reported that they had been requested by the Public Works Department of Pittsburgh, to establish a rating of boilers of different types, and with different furnaces and settings, which the city could adopt with a view to putting an end to the installation of plants so inferior in capacity that they could not be worked without producing smoke.

The paper of the evening was read by Mr. C. B. Albree, on "Ornamental Iron Work." This paper was illustrated by exhibits of work done in America and elsewhere, and by several hundred illustrations. The lecturer pointed out that a great deal of the best work was now made in Germany, but there was no reason why it could not be done here; and, in fact, a number of fine samples of American workmanship were shown.

American Society of Mechanical Engineers.

The second regular monthly junior meeting will be held at the rooms of the Society, 12 West 31st street, New York City, at 8.15 p. m., Tuesday, April 4. Mr. A. L. Rice will present a paper on the "Compression and Liquefaction of Gases, with Special Reference to the Liquefaction of Air." The paper will probably be supplemented by experiments with liquid air, showing the effects of extreme cold and the peculiar property of this liquid, after which there will be a free discussion. All of the members of the Society in every grade will be welcome. This will be the last junior meeting this season.

The Society has issued in abstract the report of the first monthly meeting held under the auspices of the junior section, on March 6 last. This contains the report of the Secretary of the Committee, Mr. F. E. Frothingham, which gave the plans for holding the regular meetings of the junior section. The report also contains the main portions of the address of Mr. Gardner C. Sims, late Chief Engineer on the U. S. S. Vulcan, and of Prof. Aldrich, who spoke principally of the mathematical precision with which certain of the work of bombarding Santiago was carried on.

American Institute of Electrical Engineers.

The 133d meeting of the institute was held at 12 West Thirty-first street Wednesday evening, March 23, with President Kennelly in the chair. A paper was presented by Dr. M. I. Pupin of Columbia University on "Propagation of Long Electrical Waves." The paper was discussed by Messrs. Bradley, Carty, Kennelly and Steinmetz.

It was announced that the following officers are the council nominees: President, Dr. Arthur E. Kennelly; Vice-Presidents, J. W. Lieb, Jr., Charles F. Scott, L. S. Stillwell; Managers, C. O. Mailloux, S. Dana Greene, C. S. Bradley, W. D. Weaver; Secretary, Ralph W. Pope; Treasurer, George A. Hamilton.

The council appointed Dr. F. A. C. Perrine to fill out the unexpired term of Mr. W. F. C. Hasson, who has resigned from the office of Manager on account of his removal to the Hawaiian Islands. The regular election will be held in April, and the result will be known at the annual business meeting to be held in New York city Friday, May 16, 1899. The council decided to hold the fifteenth general meeting at Boston during the last half of June, the exact date to be fixed by the Executive Committee.

Western Railway Club.

The Western Railway Club met Tuesday afternoon, March 21, at the Auditorium Hotel, Chicago. The names of eleven new members were read and it was announced that the Committee on M. C. B. couplers would report at the next meeting, as well as the Committee appointed to suggest changes in the M. C. B. Interchange Rules. In view of a trip to Europe and an extended absence, Prof. W. F. M. Goss offered his resignation as Second Vice-President of the club, which was not accepted.

The first paper presented was by Mr. E. M. Herr, entitled, "Compound Locomotives on the Northern Pacific Ry.," which was followed by a paper by Mr. C. L. Street, "High Speed Passenger Locomotives."

Compound Locomotives.

Mr. Herr gave data regarding the dimensions of the compound and the similar single expansion locomotives used on the Northern Pacific, the character of the service, the profile of the road and the records of the relative performance and the cost of running repairs of the different classes of locomotives for about eighteen months. One of the most important facts brought out was that the cost of running repairs was practically the same for the two kinds of locomotives, and he strongly recommended the use of compounds for heavy freight service, a careful study to improve the design of the detail parts and greater care to insure that the compound locomotives were properly operated and maintained.

In the discussion, Mr. J. N. Barr, of the Chicago, Milwaukee & St. Paul, stated that, in addition to a better fuel record of from 17 to 27 per cent., the Vauclain compound freight locomotives on that road during the last three years had cost for running repairs about 14 per cent. less than corresponding single expansion engines; at the same time the compounds had made between 8 and 9 per cent. more mileage. He also stated that compound locomotives were superior to single expansion ones for heavy fast passenger service, as the capacity of the boiler was there the governing factor.

Mr. R. A. Soule, of the Baldwin Locomotive Works, explained that the excessive cost of running repairs and the numerous delays which occurred with the first compound locomotives built were largely due to the design of the detail parts and that as the result of experience several changes had been made. The size of the piston valves and cylinders had been increased, the guides, crossheads and frames had been strengthened, improvements had been made in the valve gear, resulting in a better steam distribution and a more equal division of the work between the high and low-pressure cylinders, while the cylinder ratio had also been changed with good results.

Mr. J. F. Deems, of the Chicago, Burlington & Quincy, suggested that it was not surprising that the first compound locomotives had been found imperfect when it was considered that even now, after many years' experience, it was not possible to bring out a new design of single expansion locomotive and have it entirely satisfactory from the start.

The advocates of single expansion locomotives were either absent or took no part in the discussion.

Mr. Street's paper was largely a compilation of pictures and data regarding single expansion locomotives for fast passenger service which have previously been published.

PERSONAL

(For other personal mention see Elections and Appointments.)

—Mr. Chase E. Osborn of Sault Ste. Marie, Mich., has been appointed Railroad Commissioner of Michigan, succeeding Mr. S. Wesselius.

—Mr. Horace Whiteman, who was for eight years Secretary and Treasurer of the Camden & Atlantic, now a part of the West Jersey & Seashore, died at his home in Philadelphia, Pa., March 26.

—Mr. Darwin Thayer, who was for twenty years Superintendent of the Dunkirk, Allegheny Valley & Pittsburg, died in Portland, Ore., March 14. Mr. Thayer was born in Baintree, Vt., 1828.

—MM. Boell, Thore and Carrier, of the Motive Power Department of the French State Railroads, who have been making a tour through this country, visiting New York, Philadelphia, Altoona, Buffalo, Chicago and St. Paul, will sail from New York on their way home on Saturday, April 1.

—Mr. John S. McCrum, who was for twenty-five years, prior to 1895, Superintendent of Motive Power and Machinery of the Kansas City, Fort Scott & Memphis, and the roads from which it was formed, died at his home in Kansas City, Mo., March 20. Mr. McCrum was born in Juniata County, Pa., in 1838, and entered the railroad service in 1854 as apprentice machinist with the Pennsylvania R.R.

—Mr. William Allen Smith, who was for several years President of the Alumni Association of the Columbia School of Mines, from which he was graduated in 1868, died at his home 102 East Fifty-seventh street, March 24. Mr. Smith was Private Secretary to United States Minister Bancroft, in Berlin. After returning to this country he was connected with the Cooper-Hewitt Co. and Phelps, Dodge & Co., and later became Treasurer of the Harvey Steel Co. Mr. Smith was a member of the University and Engineers' Clubs.

—Mr. Jeremiah Head died in England, March 10, at the age of 64 years. Mr. Head was distinguished as a civil engineer, mechanical engineer and iron master. He had been President of the Institution of Mechanical Engineers, was a member of the Institution of Civil Engineers, in which he had received a Watt medal and a Telford premium, and was one of the founders of the British Iron and Steel Institute. He was a man of great mental power and great activity and wrote and spoke much more readily than most of the men of his profession. He had visited the United States frequently and had high notions of the engineering methods of this country and had done much to lead his countrymen to a realization of the importance of considering American practice.

ELECTIONS AND APPOINTMENTS.

Arkansas & Oklahoma.—The officers of this company referred to in the Construction column are: President, J. M. Bayless, of Cassville, Mo.; Treasurer, W. R. Fylker; Secretary, D. H. Woods, and Attorney, J. A. Rice.

Atkinson & Northern.—William J. Dobbs has been appointed General Superintendent, with headquarters at Atkinson, Neb.

Baltimore & Ohio.—O. J. Kelly has been appointed Master Mechanic, with headquarters at Riverside, Baltimore, Md., succeeding E. T. White, transferred.

Brooklyn Elevated.—Supreme Court Justice Maddox, of Brooklyn, N. Y., on March 25, signed an order discharging Mr. Uhlmann as receiver. The road is to be turned over to the Brooklyn Rapid Transit Co. (Feb. 24, p. 147.)

Chicago, Lake Shore & Eastern.—W. G. Brimson, President and General Manager, has resigned and is succeeded by C. H. Ackert, who is to be Vice-President and General Manager of the Elgin, Joliet & Eastern and of the C., L. S. & E.

Chicago, Milwaukee & St. Paul.—J. H. Skillen has been appointed Traveling Freight Agent, with headquarters at New York, succeeding A. B. Caswell, transferred.

Chicago, Rock Island & Pacific.—A. L. Studer has been appointed Assistant Superintendent Motive Power and Equipment west of the Missouri river, with headquarters at Horton, Kan., succeeding J. W. Fitz Gibbon resigned. W. H. Stocks has been appointed Master Mechanic of the Illinois Division, with headquarters at Chicago, succeeding A. L. Studer, and R. D. Fiddler has been appointed Master Mechanic of the Eastern Iowa Division, with headquarters at Rock Island, succeeding W. H. Stocks. Effective March 24.

Cleveland, Cincinnati, Chicago & St. Louis.—Warren J. Lynch has been appointed General Passenger Agent. Effective May 1.

Delaware, Lackawanna & Western.—Andrew Reasoner, Superintendent of the Morris & Essex Division of the D., L. & W., has resigned, and is succeeded by Edwin G. Russell, who was formerly Superintendent of the Rome, Watertown & Ogdensburg Division of the New York Central & Hudson River. J. W. Fitz Gibbon, heretofore Assistant Superintendent of Motive Power of the Chicago, Rock Island & Pacific, has been appointed Superintendent of Machinery on the D., L. & W., an office recently created.

James Neafie, Roadmaster, with headquarters at Boonton, N. J., has resigned and is succeeded by his son, A. J. Neafie.

Des Moines, Northern & Western.—Frank Horton has been appointed Superintendent.

Houston & Texas Central.—At a meeting of the Directors held in Waxahachie, Tex., the following officers were elected: President, Thomas Hubbard; Vice-President, Hans Hellend, and Secretary and Treasurer, W. C. Kelly. The Directors are: Hans Helland, G. A. Quinlan, L. A. Daffan, W. H. Getzendaner and E. W. Cave.

Kansas City, Pittsburgh & Gulf.—J. H. Best, heretofore Assistant General Passenger Agent, has been appointed General Freight Agent.

Knoxville & Bristol.—H. J. Baker has been elected President and J. W. Caldwell appointed General Counsel.

Leetonia.—The officers of this company, referred to in the Construction column, are: President, C. B. Farr, Williamsport, Pa.; General Superintendent, J. S. Snyder, Leetonia, Pa.; Chief Engineer, H. B. Norton, Ridgeway, Pa.

New York Central & Hudson River.—Dewitt C. Moon, heretofore Superintendent of the Dunkirk, Alleghaney & Pittsburgh, has been appointed Superintendent of the Rome, Watertown & Ogdensburgh Division, succeeding Edwin G. Russell.

New York, Philadelphia & Norfolk.—At a meeting of the stockholders held at Cape Charles, Va., R. Ellis and John Lloyd were elected new Directors, succeeding R. H. Townsend, Jr., and John Keller, deceased.

Norfolk & Western.—G. R. Henderson Mechanical Engineer, has resigned.

North & South Carolina.—The officers of this company, referred to in the Construction column, are: President, Col. H. S. Haines; Secretary and Treasurer, Adam Treadwell; General Counsel, Alfred P. Thom. The directors are: Col. H. S. Haines, W. B. Hatcher, Alfred P. Thom, F. W. Tatem, John N. Vaughan, Jas. A. Lockhart, Col. J. S. Cunningham, R. B. Tunstall, W. H. Sterling.

Pennsylvania.—C. A. Chipley, General Freight Agent, with headquarters at Philadelphia, Pa., has resigned.

S. L. Shober, Jr., has been appointed Assistant Engineer of the Tyrone Division, succeeding C. P. McArthur of Harrisburg, Pa.

Port Jervis, Monticello & New York.—At a meeting held in New York, March 16, the following new

Directors were elected: A. E. Godeffroy, T. W. Lillie, H. P. Searle, W. H. Collins, C. B. Sidell, Willard V. King and George E. Braine. Mr. Godeffroy was elected President and T. W. Lillie Secretary and Treasurer. Martin B. Waller, Superintendent, has resigned.

Rutland Railroad.—Thos F. Chappell has been appointed Chief Engineer of the Rutland, and the Ogdensgurg & Lake Champlain, with headquarters at Rutland, Vt.

St. Louis, Iron Mountain & Southern.—A. Bohlenger has been appointed Trainmaster, with headquarters at Little Rock, Ark., succeeding C. M. Hunt, resigned.

Southern.—W. H. Wells has been appointed Chief Engineer succeeding C. H. Hudson recently resigned.

Texas & Pacific.—Frank J. Gould and Winslow S. Pierce have been elected Directors of this company, succeeding Samuel Thomas and Milton H Smith.

RAILROAD CONSTRUCTION, New Incorporations, Surveys, Etc.

ARKANSAS & OKLAHOMA.—Surveys are to be begun next week on the 65 to 70 miles of extension from Gavett, Ark., to the northwest. Most of the work is light, the maximum grade being 1½ per cent., and the maximum curve 6 deg. There will be one bridge of 600 ft. required over the Grande River. The officers are given under "Elections and Appointments." (Official.)

BAYFIELD HARBOR & GREAT WESTERN.—D. M. Sabin, of Stillwater, Wis., has been in St. Paul, Minn., making arrangements for letting a contract for 30 miles of extension through the logging country of Northern Wisconsin. The line now runs from Bayfield west about 11 miles to Raspberry.

BOGUE, PHALIA & SUNFLOWER RIVER.—The Governor of Mississippi has approved the charter of this company to build a broad gage road from a point north of Swain on the Southern, to run south about 25 miles to a point where Murphy's Bayou enters the Sunflower River. J. M. Wynn of Greenville, Miss., is among those interested.

BOISE, NAMPA & OWYHEE.—McDonald & Kase, of Nampa, Ida., have a contract for the first 10 miles of extension of this line from Guffey south. (Feb. 10, p. 107.) W. H. Dewey, of Dewey, Ida., is President. (Official.)

BRAINERD & NORTHERN MINNESOTA.—As already reported (March 17, p. 197), this company contemplates extensions from Bemidji, Minn., north some 15 to 20 miles into the pine forests. Preliminary surveys have been made, but the line is not positively located, nor has its construction been fully determined upon, but it is quite probable that the extension will be made this season. (Official.)

CAROLINA NORTHERN.—Surveys are in progress for this proposed line from Lumberton, N. C., southwest 45 miles to Merriam, S. C. Albert A. Sparks, of Lumberton, is President. (Feb. 24, p. 145.)

CATSKILL & TANNERSVILLE.—Mairs & Lewis, of 18 Broadway, New York, have the contract for the four-mile extension from Otis Summit, N. Y., via Sunset, The Parks and Twilight to Santa Cruz. It is to be completed June 15. (Feb. 4, 1898, p. 88.) Chas. L. Rickerson, of 54 Harrison street, New York, is President. (Official.)

CHICAGO & NORTHWESTERN.—Official statement is made as to the extensions building and proposed by this line as follows:

The Boyer Valley extensions are from Mondamin, Ia., northeast via Ute (29 miles), and Okonenzollern (19 miles), to Stockholm (61 miles), where connection is to be made with another extension to be made from Denison northeast 25 miles to Wall Lake. The contractors are McArthur Bros. Co., Chicago; Mitchell Vincent, Onaway, Ia., and McDougall & Duffy of Milwaukee. Grading is in progress, but no track as yet is laid. (Feb. 24, p. 146; March 3, p. 161.)

The Minnesota & Iowa extension is from Burt, Ia., northwest 92.5 miles to Sanborn, Minn. The whole line for grading, bridging and track laying is under contract to Winston Bros. of Minneapolis. Grading is not yet begun. (Jan. 6, p. 15.) A further extension of this line has been surveyed from Sanborn, Minn., northwest 26.4 miles.

The Boone County cut-off runs between Boone, Ia., and Ogden, 7.4 miles, crossing the Des Moines River. Winston Bros. of Minneapolis, have the grading, and Wydell & Co., of Mankato, Minn., the masonry.

The reported extension from Moville, Ia., west into Sioux City is not contemplated. (Feb. 3, p. 92.)

CHICAGO, BURLINGTON & QUINCY.—A dispatch states that building is to be begun soon on an extension of the Arcadia branch from Arcadia, Neb., north west about 20 miles, to Sargeant. The line has been projected as far as Brewster for a number of years, and was graded to Sargeant several years ago. It is also stated that an extension is under consideration from Burwell, Neb., northwest.

The company has completed a track connection at Leon, Ia., with the Keokuk & Western, which was recently absorbed. (K. & W., Feb. 24, p. 148.)

CHICAGO, ROCK ISLAND & PACIFIC.—The grades on the line between Meola and Council Bluffs, Ia., are to be reduced from between 40 and 52 ft. per mile to a maximum of 30 ft., and work is to be begun as soon as the weather permits. The company will also extend the double track, completed to Moscow, Ia., last year, 12 miles west to a connection with the Burlington, Cedar Rapids & Northern. (July 7, 1898, p. 502.)

COAST RAILWAY, OF NOVA SCOTIA.—Grading is completed from East Pubnico, N. S., to Atwood Brook, 17 miles, on the section under contract from East Pubnico, northeast 66 miles to Lockport, to H. J. Townsend & Co., of New Glasgow, N. S. All the masonry is completed on the bridges for the same distance. New contracts for the extension to Halifax via Lockport, Liverpool, Bridgewater, Lunenburg and Chester, 109 miles, will probably be let in May or June. The rails and rolling stock for the first 20 miles are ready for delivery. Work was closed down in December and will not be resumed until weather permits. A branch is to be surveyed this summer from Liverpool north 25 miles to Caledonia. The company expects to complete the entire enterprise by Dec. 31, 1900. Application is made to the local Legislature now in session in Halifax to change the name of the company to the Halifax & Yarmouth Co., Limited. (Dec. 16, 1898, p. 903.) L. H. Wheaton, of Yarmouth, N. S., is General Superintendent. (Official.)

COLORADO STATE LINE.—This company has been incorporated to build a railroad from Crevasse, Colo., north about 100 miles along the line between Colorado and Utah to Vernal, Utah. The headquarters are at Grand Junction, Colo. This is probably the proposed extension of the Rio Grande Western from Crevasse northward, which has been surveyed about 45 miles. (Feb. 3, p. 93.)

COLUMBUS & NORTHERN.—This company has been incorporated in New Mexico to build a railroad from Columbus, Grant County, on the Mexican border line, to run north through the counties of Grant, Socorro, Valencia, Bernalillo and San Juan, into Utah and thence to Salt Lake City. The incorporators are: Andrew O. Bailey, A. J. Clark, J. P. Bryan, J. A. Mahoney, William R. Merrill, Harvey O. Olcott, of New Mexico, and Albert Ransom, of Ohio.

CRIPPLE CREEK.—This company was incoroporated in Arizona March 22, with a capital stock of $2,000,000, to build a railroad from Canyon City, Colo., on the Atchison, Topeka & Santa Fe, and the Denver & Rio Grande, to run north about 25 miles to the Cripple Creek mining district. The route lies a few miles west of the Florence & Cripple Creek and parallels that line. The incorporators are: Albert T. Scharps, Wm. L. Kieper and Samuel L. Richardson, all of New York city. The principal office is at Phoenix, Ariz., with transfer offices in New York city, Boston, Mass., and London, Eng.

GREAT NORTHERN.—A cut-off from eight to ten miles in length is to be built from a point north of Quincy Station, Wash., running west to a point several miles west of Trinidad. Foley Bros. & Larsen have the contract.

GREAT NORTHERN (CANADA).—A contract has been let to the Great Northern Construction Co., composed of Boston, New York and Quebec capitalists for building this line and a sub contract has been let to Messrs. Rose, Barry and McRae. The line is to be extended to Quebec and includes a bridge over the river Ottawa at Hawkesbury. (Aug. 12, 1898, p. 587.)

HAWTHORNE, NEBAGAMON & SUPERIOR.—The route for this proposed line is from Hawthorne, Wis., to Lake Nebagamon, 7.35 miles. It is to be a timber and logging road. The officers are not yet named. (Sept. 2, p. 639). F. W. Weyerhauser, of Chippewa Falls, Wis., is interested. E. B. Banks is Engineer in charge. (Official.)

HUNTINGTON & BROAD TOP MOUNTAIN.—Press reports from Pennsylvania state that this company will expend considerable money in making improvements this year, including the straightening of the line near Tatesville, Pa.

ILLINOIS CENTRAL.—We have received information as to the extensions now building and proposed by this line as follows:

The Tellahatchie branch of the Yazoo & Mississippi Valley is being extended from Phillip, Miss., southeast about 16 miles to Greenwood. J. C. Neely of Phillip, is contractor for the grading and bridging, which is to be completed about April 1, and track is to be laid thereon immediately by the railroad company. It is expected that the line will be in operation about May 1. Work has been under way on this extension for upwards of a year, but was delayed on account of the incessant rains in that territory. (June 24, 1898, p. 467.)

The Yazoo Delta extension of the Yazoo & Mississippi Valley is from Tutwiler, on the Tallahatchie branch, south about 21 miles to Ruleville. This is now completed and in operation. The line from Ruleville south to Moorehead, 21 miles, was completed a year ago. From Moorehead south to Lake Dawson, about 15 miles, grading is finished and the rails will soon be laid. Pond & Shedd had the contract for grading and bridging on these extensions. (Yazoo Delta, March 3, p. 162.)

A cut-off three miles in length will be built this summer between Black Bayou and Phillip Station, Miss., on the Tallahatchie branch of the Y. & M. V. J. C. Neely has the contract for grading and will begin work immediately.

The Fort Dodge & Omaha is building from Tara, Ia., a point about six miles west of Fort Dodge, to run west 130 miles to Council Bluffs. The contracts are let as follows: Tara to Coon River, C. E. Loss & Co., Chicago; Coon River to Wall Lake, and from Woodbine to Loveland, McGee, Kahmann & Co.; Wall Lake to Woodbine, J. D. Lynch; Wickham & Co. for about five miles of grading in the vicinity of Loveland, including the overhead crossing of the Chicago & Northwestern; also the grading of yards and tracks inside the limits of Council Bluffs; McShane Bros. have the contract from Loveland to Council Bluffs. Campbell & Co. have the contract for bridging on a part of the line, and the remainder of the bridging will be built by the railroad company. The American Bridge Works of Chicago have the contract for steel bridge material. It is understood that while this road is entirely distinct from the I. C., it is being built in the interest of that corporation. The new line will not be ready for operation until late in the fall. Graders will begin work as soon as the weather permits. Track laying will be done by the railroad company. J. F. Duncombe of Fort Dodge is President of the F. D. & O., and C. E. Grafton of Council Bluffs, Ia., is Engineer in charge. (March 3, p. 161.)

The Canton, Aberdeen & Nashville is building about nine miles of road from Winfield, Ala., on the Kansas City, Memphis & Birmingham line of the Kansas City, Fort Scott & Memphis, to the coal fields in Marion County. This work is being carried on under the direction of G. D. Fitzhugh, Engineer in charge at Winfield, and Smith & Co. have the grading and bridging contract. It is understood that this line is being built in the interest of the I. C., to enable it to reach to coal fields north of Winfield, and that the I. C. will obtain trackage between Winfield and Aberdeen over the Kansas City, Memphis & Birmingham. This line is about ready for operation. (Dec. 30, 1898, p. 938.)

INVERNESS & RICHMOND.—This road was sold on March 16 to Peter Ryan, of Toronto, and Messrs. Mackenzie, Mann & Co., all very wealthy railroad contractors, by Messrs. Oakes, Grey & Wheaton. The road will be hurried to completion. S. D. Oakes ten years ago bought the road from Frank Allen, of New York, and has since spent a fortune on it. These gentlemen have also purchased the largest single coal-bearing area in Canada, embracing about 60 square miles in Inverness County, N .S., in the localities of Port Hood, Broad Cove and Chimney Corner. They propose going into coal mining very extensively in rivalry with the Dominion Coal Co. Arrangements have been completed for a fleet of coalers to carry coal to Boston, Prince Edward Island and Montreal. The harbors at the company's termini, which will be the shipping ports of the new concern, are Cheticamp on the north and Hastings and Cariboo Cove on the south, which are nearer the market points than Sydney and Louisburg, the present Nova Scotia coal ports.

IOWA CENTRAL.—A contract is let, according to report, for the proposed extension from Belmond, Ia., to run northwest 28 miles to Algona. This is under the recent Iowa Central & Western incorporation. (Nov. 4, 1898, p. 804.)

KANSAS & TEXAS COAL.—Grading will be completed about June 1, and contract let July 1, on this proposed line from Excello, Mo., via Ardmore to Brevier, about 14 miles. Johnson Bros., of St. Elmo, Ill., have the contract. (Jan. 16, p. 15.) Geo. V. Leighton, of St. Louis, Mo., is Vice-President. (Official.)

KANSAS CITY, PITTSBURG & GULF—The canal at Port Arthur, Tex., connecting the terminals of this road with deep water was completed last week. (March 3, p. 161.)

LAKE ERIE & WESTERN.—Official statement is received that the Cleveland & New Castle from Cayuga Falls, Ohio, to New Castle, Pa., 70 miles, is abandoned. (Aug. 19, 1898, p. 603.)

LAKE PROVIDENCE & WESTERN.—This company proposes to build from Lake Providence, La., on the Mississippi, west about 40 miles to Mer Rouge, on the St. Louis, Iron Mountain & Southern line. The officers are as follows: President, J. E. Ransdell; Secretary and Treasurer, E. J. Hamley, both of Lake Providence, La.

LAKE SHORE & MICHIGAN SOUTHERN.—Surveys are reported completed for an extension from Stoneboro, Pa., southwest to New Castle. It would pass through Brookfield about two miles southwest of Sharon. (Jan. 20, p. 53.)

LAKE TAHOE.—C. T. Bliss of San Francisco, Cal., states that the company intends to begin grading this line from Truckee, Cal., south, 15 miles to Tahoe City, as soon as the weather permits, and hopes to have the line completed by June 1. D. L. Bliss of Carson City, Nev., the President and General Manager, has been East buying rolling stock. (Feb. 24, p. 146.)

LEETONIA.—The route of this proposed mountain line is from Tiadaghton, Pa., on the Tiadaghton & Fahnstalk, southeast to Leetonia. Surveys are uncompleted and no contracts are let. The maximum grade is 6 per cent., and the maximum curve 30°. The officers are given under Elections and Appointments. (March 24, p. 217.) Mr. Farr, who is President of the new company, is also President of the T. & F. (Official.)

LONG ISLAND.—This company is expending about $1,250,000 in improvements and equipment. A large freight yard is being built at Jamaica at which point all freight trains will be made up. Double track will be built between Rockaway Park and Far Rockaway, five miles, and during the summer months the company will operate electric cars by overhead trolley between these points under ten minutes' headway, in conjunction with steam trains which pass over the same track.

MANISTIQUE & NORTHWESTERN.—The filing of a map for the extension in Schoolcraft County, Mich., referred to in this column March 17 (p. 197), is for the extension already built last year. It runs from Scott's Camp, north eight miles to Shingleton, on the Duluth, South Shore & Atlantic. The time table went into effect Jan. 1. (Sept. 16, 1898, p. 678.)

MEXICAN NATIONAL.—The extension of the Patzcuaro branch of about 50 miles west to the city of Uruapan, Mexico, was completed Feb. 13, and opened for traffic March 19. (Feb. 25, 1898, p. 148.)

MEXICAN ROADS.—The State of Yucatan has granted a charter to Manuel de Arrigunaga for a road from Halacho Station, on the new line between Merida and Campeachy, to run west to the frontier of Campeachy, with branches to San Diego and Acu.

MISCELLANEOUS COMPANIES.—The Rocky Mountain Construction Co. was incorporated Feb. 28, with a stock of $200,000, to operate railroads in San Juan County, Colo. The officers are: President, E. J. Lawrence, Fairfield, Me.; Treasurer, Cyrus W. Davis, Waterville, Me.

MONTANA.—Surveys are in progress for the extension from Leadboro, Mont., east about 20 miles to Martinsdale, and contracts are to be let about April 1. (March 17, p. 197.) The work is light. Richard A. Harlow of Helena, Mont., is General Manager. (Official.)

NEW JERSEY ROADS.—Surveys are reported completed and grading will be begun about April 15 on the line from Morristown, N. J., northeast through Collinsville, Hanover and Fairfield to Little Falls. Chas. D. Haines of 100 Broadway, New York, and John E. Melick of Morristown, N. J., are among those interested. (March 17, p. 197.)

NEW YORK, NEW HAVEN & HARTFORD.—The contractors' work is practically completed on the Norwich & Worcester extension of the New England from Allyn's Point, Conn., south about seven miles to Groton. The company is laying ties and rails and completing the ballasting, which it is expected will be finished within a few weeks. (March 3, p. 161.)

NORTH & SOUTH CAROLINA.—At a meeting of the stockholders, held at Norfolk, Va., March 24, the directors were authorized to begin building immediately the first section of the road from Virgilina, Va.,

southward. The company was incorporated several weeks ago in both North and South Carolina, to build from Virgilina, south to Columbia, S. C. (Official.) The officers and directors are given under Elections and Appointments. (Feb. 17, p. 132; March 10, p. 180.)

NORTH BEND & KETTLE CREEK.—The company is building four branches for lumber and forest products. These are now graded and rail laying will be begun in a few days. (Dec. 16, 1898, p. 904.) The work is being done by the company. (Official.)

ONTARIO ROADS.—The Ontario Government on March 28 submitted proposals to the Legislature to grant a subsidy of $480,000 and 5,000 acres of land for a railroad from Missanabie station on the C. P. R. to run northeast to Moose River on James Bay.

OREGON RAILROAD & NAVIGATION.—Grading is well under way on the Snake River Valley extension from Wallula, Wash., running east 65.7 miles along the south side of Snake River to Grange City. There are about 2,000 men and 400 teams at work. The rails, which will be 75-lb. in weight, are already ordered. Coykendall & Shields of Wallula, Wash., are superintendents of construction. Grading contractors are as follows: Mason & McBride, Miller & Burbank, E. C. Burlingame, G. A. Anderson, Mendenhall & Deal, Thornton & Moran, Elliott, McDonald & Co., G. A. Coykendall, Winters, Parsons & Boomer, Mendenhall Bros., E. F. Mitchell, J. A. Caughren, S. W. Aldrich, Wolfe & Golden, R. J. Lizee, Daniel Kern, Corey Bros. Co., John Grant. Bridge contractor, Robert Wakefield. (Jan. 13, p. 33.)

Further extensions are surveyed from Riparia, Wash., east 71½ miles, to Lewiston, Id., and from Lewiston southeast 101 miles, via Clearwater Valley, Camas Prairie to Mt. Idaho. This is under the Clearwater Valley incorporation. (Official.)

Surveys are reported in progress for a branch from Fairfield, a few miles south of Spokane, Wash., to run southwest five miles to Waverly, connecting with the beet sugar factory of D. C. Corbin. Grading is to be begun in a few days.

ORFORD MOUNTAIN.—The time for building this line has been extended to Dec. 31, 1902. It was completed in December, 1892, from Eastman, Quebec, northeast 26.5 miles to Kingsbury, and is to be extended north across the St. Francis River to Richmond. This extension will require a bridge costing $75,000. (Dec. 23, 1892, p. 975.)

PENNSYLVANIA.—The probable route for the extension up the Monongahela River from West Brownsville, Pa., south 52 miles to Morgantown, W. Va., would follow the river up 10 miles to Millsboro, at the mouth of Ten Mile Creek, with a bridge across to the Fayette County side; thence down the east bank as far south as Dunkirk Creek, crossing to the Green County side, and thence down the west bank of the river into West Virginia. (March 24, p. 217.)

A petition has been presented to the Common Council of Trenton, N. J., asking for an ordinance granting right of way to this company to build a freight spur on Fair street.

PENNSYLVANIA ROADS.—At a meeting held at Kane, Pa., recently, a company was organized to build a standard gage road from Kane northeast about 10 miles to Mt. Jewett. E. K. Kane of Kushequa, Pa., was made President.

Work is to be begun, according to report, early in April for the extension of the Ligonier Valley from Ligonier, Pa., southeast about 20 miles, via Mechanicsburg to Somerset on the Baltimore & Ohio. H. E. Marker of Greensburg, Pa., is attorney for the road. (Feb. 10, p. 108.)

PITTSBURG, MONONGAHELA & WHEELING.—An effort is being made to revive this project. The company was incorporated in Pennsylvania Feb. 26, 1895, to build from Monongahela City southwest via Bentleyville, about 50 miles to Wheeling, W. Va. Final surveys were completed in February, 1897, and it was stated at that time that grading was in progress, but practically no work has been done on the road. Among the directors are: J. M. Guffey, Willis L. McCook, Pittsburg; R. C. Broadbent, Philadelphia; General A. M. Dodge and W. G. Dacey, New York. Mr. Dacey was named as President. (March 1, 1895, p. 143; Feb. 26, 1896, p. 159; March 5, 1897, p. 177.)

PORT ANGELES EASTERN.—Preliminary surveys are to be begun April 1 on this line from Port Angeles east about 35 miles to connect with the Port Townsend Southern. The company will require several trestles and several bridges. (March 10, p. 180.) Wm. Martell, of Port Angeles, Wash., is Superintendent of Construction. (Official.)

RIO GRANDE, SIERRA MADRE & PACIFIC.—J. Fewson Smith of Salt Lake City, Utah, Chief Engineer of this road, has gone South with the intention of surveying the proposed extension from the present terminus at Casas Grandes, Mexico, west, through the mineral regions of Yaqui coal country. The line now runs from Ciudad Juarez southwest 157 miles to Casas Grandes. It was completed last year. (Nov. 11, 1898, p. 820.)

SOUTHERN.—President Samuel Spencer is reported as stating surveys have been ordered for an extension southward to Savannah, Ga., from both Columbia, S. C., and Augusta, Ga. This extension is necessitated through the recent sale of the Florida Central & Peninsular to the Seaboard Air Line. The distance from Columbia to Savannah over the Florida Central to Savannah is 142 miles, from Augusta to Savannah about 125 miles.

TIONESTA VALLEY.—Track is laid on this entire extension from Lamonaville, Pa., via Loleta to Ogilsby, 12½ miles. (Jan. 6, p. 16.) Isaac Horton of Sheffield, Pa., is General Manager. (Official.)

TORONTO & HUDSON BAY.—The Ontario Government on March 28 submitted proposals to the Legislature for $350,000 and a land grant for the proposed line through Sudbury, Ont., northwest to Moose Factory, on Hudson Bay. W. T. Jennings, of Toronto, Ont., is Consulting Engineer and Secretary. (Sept. 23, 1898, p. 697.)

UTAH, NEVADA & CALIFORNIA.—Surveys are reported in progress in Nevada for the proposed line from Los Angeles, Cal., northeast to connect with the Utah & Pacific, now building in Utah. C. M. Dull and Chas. D. Savery, of Salt Lake City, Utah, are among the incorporators.

WABASH.—The Wabash having floated its new loan of $1,600,000 (March 24, p. 220), announcement is made that the company will begin work at once on the new line from Moulton, Ia., north 27 miles to Albia. It is stated that 1,000 men and 400 teams will go to work near Albia about April 1. (Feb. 10, p. 109.)

WASHINGTON RUN.—Bennett & Talbott, of Greensburgh, Pa., who have the contract for this line from Layton, Pa., on the B. & O., to the Washington Coal & Coke Co.'s mines, 4½ miles, have the grading about half completed. (March 3, p. 162.) W. Harry Brown, Conestoga Building, Pittsburgh, Pa., is President. (Official.)

WEST VIRGINIA & PITTSBURG.—Grading was begun March 1 on the extension from Camden-on-Gauley, W. Va., south about 9½ miles to the mouth of Cherry River (Feb. 3, p. 93). Joseph Fuccy, of Weston, W. Va., has the contract. (Official.)

WILSON & SUMMERTON.—The company hopes to begin building in April the extension from Sumter, S. C., north 31 miles to Camden. (Official.) Notice has been entered heretofore of this extension under the Atlantic Coast Line, but the W. & S. is not a part of that system. (March 10, p. 179.)

YANKTON, MISSOURI RIVER & BLACK HILLS.—This company was incorporated in South Dakota March 24, with a capital stock of $5,000,000, to build a railroad from Yankton west 325 miles, through the counties of Yankton, Bon Homme, Charles Mix, Brule, Lyman, Presho, Pratt, Jackson, Ziebach, Pennington, Meade and Lawrence to Deadwood. The directors are: C. W. Pratt and H. C. Tucker, Edgerton, S. D.; H. B. Wynn, F. E. J. Warrick and H. P. Ohlman, Yankton, S. D.

YORK SOUTHERN.—Grading is practically completed on the Dallastown line from Dallastown, Pa., to a point on the York Southern. There are about 20 men and teams at work. S. M. Manifold of York, Pa., is the contractor and Chief Engineer, and John Dobbling of Madison avenue, York, the sub-contractor. (Dec. 9, 1898, p. 886.) The line when completed is to be operated by the York Southern, and bonds to the face value of $5,000 are issued to meet the cost of building. (Official.)

Electric Railroad Construction.

ATLANTA, GA.—The Collins Park & Belt Ry., better known as the Chattahoochee River line, has completed the extension on Walton St., and cars have been put in operation.

AUBURN, N. Y.—The Auburn City Ry. Co. will build an extension of 10¼ miles to connect with the Geneva Waterloo, Seneca Falls & Cayuga Lake Traction Co. The extension will pass through the villages of Cayuga and Seneca Falls, crossing the New York Central & Hudson River RR. tracks by an overhead bridge. The connection with the G., W., S. F. & C. L. T., will be made at Orchard Beach in Seneca Falls. Certificates for the above extension was filed with the Secretary of State March 22.

BENNINGTON, VT.—The Bennington & Woodford Electric RR., which during the freshet last October sustained considerable damage to the roadbed and bridges, will be rebuilt this spring so as to avoid all trestles and bridges. The road, which was operated in the summer time only, runs from Bennington about nine miles to Glastonbury, Vt.

BENTON FALLS, ME.—The Benton Falls & Fairfield, which was built principally for freight traffic, and now operating five miles of road, will build a new power station on the Sebasticook, about two miles above Benton Falls. (Aug. 26, 1898, p. 619.)

BOSTON, MASS.—The Boston Elevated RR. Co. has a petition before the Cambridge Aldermen to lay double tracks on Prospect St., to facilitate transit between East Cambridge and Somerville.

BROOKLYN, N. Y.—The Brooklyn & Brighton Beach RR., which was transferred last week to the Brooklyn Rapid Transit Co., will be changed to an electric line to conform with the system used by the Rapid Transit Co., and will practically be an extension of the Rapid Transit Co.'s lines, and will be operated in connection with the elevated railroads also absorbed.

Last week arrangements were completed for the transfer of the Brooklyn Elevated RR. to the Brooklyn Rapid Transit Co., and plans are being prepared to change the motive power of the steam roads to electricity.

BUFFALO, N. Y.—At a meeting of the stockholders, March 22, of the Buffalo & Depew Ry., it was proposed to increase the capital stock from $100,000 to $350,000 to build the seven miles of proposed electric railroad. There will be no grade crossings on this road. (March 24, p. 218.)

CHICAGO, ILL.—We are officially informed that the number of miles proposed by the Aurora, Wheaton & Chicago Ry. Co., which was incorporated March 13, with a capital stock of $1,500,000, is indefinite, but one line will be between Aurora and Chicago. Bids will be asked on the required rails and rolling stock as soon as surveys are completed. The officers are: President, B. Mahler; Vice-President, L. J. Wolf; Secretary, Edward Dickinson; Treasurer, M. J. Mandlebaum; Manager, Will Christy; Engineer, Charles Jones. Purchases will be made at Cleveland.

CHILLICOTHE, O.—T. C. Jeffries, of Columbus, is President of the Chillicothe, Bainbridge & Hillsboro Electric RR. Co., recently organized to build an electric railroad over the Scioto Pike from Chillicothe to Hillsboro. The distance west from Chillicothe to Hillsboro via Bainbridge is about 30 miles. This road would necessitate several bridges. It is announced that work will be begun within 30 days.

CINCINNATI, O.—The Cincinnati Connecting Belt Line RR., has been incorporated by J. G. Schmidlapp, Wm. C. Proctor, Louis E. Miller, G. P. Griffiths and Thomas D. Rhoades, all of Cincinnati. The capital stock is $50,000. The proposed road is to be a double track electric line from a point near Court St., and Guilbert Ave. in Cincinnati, northwest through the villages of Bond Hill, Norwood, Elmwood, College Hill and Mount Healthy.

CLAREMONT, MASS.—The Governor of Massachusetts has signed the charter for the Claremont Electric St. Ry.

CLYDE, N. Y.—Chas. W. Field informs us that the company which he is about to incorporate with a capital stock of $200,000, is the Clyde & Sodus Bay RR. Co., which is to build an electric railroad 12½ miles long from Clyde through Rose, Bonnie Castle to Sodus Bay. Bids will probably be asked within 30 days on the rolling stock. Contracts will soon be let for building the road. The survey is practically completed. It is proposed to use 12 closed motor cars and 12 open trailer cars on this road. Mr. Lucius L. Moses is associated with Mr. Field in this enterprise.

COLUMBUS, O.—The County Commissioners are considering the route applied for by the Columbus & Buckeye St. Ry. Co., which will necessitate a new bridge over Big Walnut Creek. T. J. Keating, one of the incorporators, is counsel for the company. (Jan. 13, p. 34.)

CORVALLIS, ORE.—Thomas Welsher, A. Wilhelm and Henry Elliott have petitioned for right of way for an electric railroad between Corvallis and Eugene, via Monroe.

CUMBERLAND, MD.—A new franchise has been granted to the promoters of the Cumberland-Westernport Electric RR., which requires them to begin work within 90 days, and to have the entire road completed and in operation within two years. E. F. Walker, Philadelphia, Pa., is President. (Feb. 17, p. 133.)

DALLAS, ORE.—Dr. R. E. Lee Steiner, of Dallas, is interested in the project to build the Luckiamute & Willamette Valley Motor Line, which will be extended to Salem, via Dallas.

DENVER, COL.—The Denver & Coal Belt RR. has been incorporated, with a capital stock of $500,000, by John C. Tuller, Thomas L. Darby, Frank I. Smith, Wm. H. Combs and C. B. Ayres. Mr. Tuller, the promoter of this road, owns some 400 acres of coal land to which the road will be built, and it is also proposed to build from Denver to Boulder, via Lafayette and Erie, in all about 40 miles long. It will probably be operated by electricity.

DETROIT, MICH.—On March 22 the Detroit & Northwestern Ry. Co. was incorporated, with a capital stock of $500,000, by Edward W. Voight, Jas. A. Randall, Hoyt Post, Seymour Bovounell, Albert H. Wilkinson, Jas. V. Oxtoby and Wm. F. Voigt. The company proposes to build an electric street railroad in the cities of Detroit and Pontiac, the villages of Farmington and Northville, in Wayne County, and also in Novi, Southfield, Bloomfield and Pontiac in Oakland County. The entire road will be about 45 miles. This is the company which about a year ago was securing right of way through the places named. (Feb. 25, 1898, p. 149.)

The Detroit & Lake Orion Ry. Co. was incorporated March 22, with a capital stock of $300,000. The incorporators are: John Winters, Oliver H. Lau and Frank C. Andrews. The object of this company is to build electric railroads in and between the cities and villages of Detroit, Highland Park, Greenfield and Hamtramck, Wayne County; from the city of Pontiac it is proposed to build a road north 12 miles to Orion, another about 10 miles east to Rochester, and still a third about 13 miles southeast to Royal Oak, where lines will be built to Warren and Highland Park, connecting for a through road to Detroit. In all about 60 miles of electric railroad will be built. In the early part of February it was reported than Mr. Winters had been granted a 30-year franchise in Leesville for two roads through that place. Franchises were also granted to him in the early part of January through Rochester.

EAST LYME, CONN.—Application has been made for the incorporation of the East Lyme St. Ry. Co., which proposes to build an electric railroad through the village of Niantic to Crescent Beach, Black Point, Flanders and Oswegatchie. Ex-Representative Calkins of East Lyme and New London is Counsel for the company.

GEORGETOWN, MASS.—The Georgetown, Rowley & Ipswich St. Ry. has made application for right of way through Newburyport. It is proposed to so arrange the tracks as not to cross the B. & M. at grade. Geo. A. Butman, 53 State St., Boston, Mass., is Treasurer of the company. (Feb. 3, p. 94.)

HOLBROOK, MASS.—The Holbrook & Weymouth St. Ry. Co., which proposes to build an electric railroad between Holbrook and Weymouth, elected the following officers March 23: President, C. H. French; Vice-President, E. P. J. Huntoon; Secretary and Treasurer, O. E. Chapman; Assistant Treasurer, Elliott Wadsworth. (Jan. 13, p. 34.)

HUDSON, N. Y.—The contract for building the Columbia & Rensselaer RR., has been awarded to Belden & Seeley, of Syracuse, temporary office at Valatia, N. Y. This road will run from Hudson north to Niverville, and from there to North Chatham, Nassau, East Greenbush and Rensselaer, then across the river to Albany, in all about 30 miles. The C. & R. recently secured control of the Kinderhook & Hudson Ry. and the Hudson St. Ry. (Stuyvesant Falls, Feb. 3, p. 94), which will be used as part of the proposed system. Early last month the contract was let for building the foundations of the power house, which is to be located at Rensselaer. It is said that Wm. F. Sheehan is interested. E. F. Foote, of New York, is one of the persons who purchased the Hudson St. Ry., and also the Hudson Electric Light & Power Co. (Oct. 7, 1898, p. 733.)

JACKSONVILLE, FLA.—We are officially informed that the extension to be built by the Main St. Ry. Co. will be about three miles long, and contracts will be let in about one month. About 300 ft. of piling trestle work will be necessary. (March 24, p. 219.)

JERSEY CITY, N. J.—The North Jersey St. Ry. Co. has been granted a franchise by the Town Council of Irvington, permitting it to build a double track extension, beginning at a point in Springfield Ave., where the tracks of the Consolidated Traction Co., a leased company, terminate, thence easterly along Springfield Avenue, to connect with other lines of the company.

KANSAS CITY, KAN.—The American Equipment Co., of Kansas City, Kan., has secured a contract from the Kansas City, Forest Lake & Bonner Springs Ry., for building an electric railroad to be operated by the storage battery system from Kansas City to Topeka, by way of Forest Lake, Bonner Springs and Lawrence, a distance of 67 miles, by the Union Pacific RR. Work on the line must be begun in 30 days and finished to Bonner Springs, a distance of 15 miles, in 90 days. The right of way for almost the entire distance, as well as large donations of land, has been secured. The

following are the directors of the railroad company: C. F. Hutchings and Henry McGrew, of Kansas City, Kan.; John C. McDaniel, of Bonner Springs; A. L. Kent, of Montreal, Can., and John Sheridan, of London, England. Mr. McDaniel is President of the company. It is the intention of the American Equipment Co., of which J. L. Brown is President, to have specifications for the necessary material to build the railroad, ready about April 1.

KANSAS CITY, MO.—Work is begun on the East Side Electric RR., which Joseph J. Hein bought last November. The road is 2½ miles long, and is being changed to overhead electric system. W. O. Hands is Manager. (Dec. 30, 1898, p. 939.)

KEENE, N. H.—The Keene Electric Ry. Co., which was originally incorporated in July, 1887 as the Keene St. Ry., has had the time extended for completing the road to March, 1902. Chas. H. Hersey, of Keene, is the original promoter.

LARCHMONT, N. Y.—The Larchmont Horse Ry. Co., by a certificate filed at Albany, March 27 proposes the following extension of the present road: From the village of Mamaroneck at the end of the present line two miles to the town of Harrison; also from Larchmont south three miles to New Rochelle, with branch roads at above termini. Chas. A. Singer, President.

LIMA, N. Y.—J. J. Churchyard & Co., of Buffalo, have the contract for building an addition to the power house for the Lima & Honeoye Falls Electric Light & RR. Co., which has not been in operation for some time. The additional equipment for the power house will consist of two 150 h. p. engines to take the place of the Otto gasoline engine recently removed. A third engine will probably be added later; three large Babcock & Wilcox tubular boilers will also be placed, and then the road again put in operation. (Feb. 10, p. 109.)

LITTLE FALLS, N. Y.—The Little Falls & Herkimer St. Ry. has a franchise for right of way through Little Falls. The company has the right of way between Utica nd Little Falls, but still lacks the consent of the Railroad Commission to cross the tracks of a steam railroad. This company is now operating eight miles of road. John V. Quackenbush is President.

LOGANSPORT, IND.—The County Commissioners have granted a franchise on the Michigan Road to the Indianapolis & Logansport Traction Co., of which Geo. J. Marott, of Indianapolis, is one of the promoters. (Feb. 10, p. 110.)

MALDEN, MASS.—We are officially informed that the Norfolk Southern St. Ry., which will be 20 miles long and running from Mansfield to Norwood, will be completed and in operation by May 1. The officers are: President, Rufus H. Sawyer; Vice-President, Chas. E. Bibber; Treasurer, John S. Nichols, all of Malden; Superintendent, J. L. Durgan, Walpole, Mass. The Mansfield & Eastern St. Ry. completed 11 miles of road Feb. 1. The company is now operating nine cars. The officers are practically the same as those of the Norfolk Southern.

MAPLEWOOD, MO.—The Maplewood & Jefferson Barracks RR. has applied to the County Court for franchises for the proposed road. J. F. McDermott is one of the incorporators.

MONTVILLE, CONN.—According to report, the Montville St. Ry. has awarded a contract to A. L. Potter & Co., Norwich, Conn., for 28,000 stringers and 600 poles of the latest improved design, and other contracts will soon be let. The company recently had the time extended for completing the road. (March 24, p. 219.)

MT. CLEMENS, MICH.—The Detroit, Mt. Clemens & Marine City Ry. Co. filed articles of incorporation with the Secretary of State of Michigan March 22, with a capital stock of $600,000, to build an electric interurban street railroad in the city of Mt. Clemens, in the townships of Clinton and Chesterfield, Macomb County, through New Baltimore, Algonac and Marine City; also in the townships of Ira, Clay and Cottrellville in St. Clair County. The incorporators are: Cornelius J. Reilly, Chas. N. Swift and Frank W. Brooks.

MT. VERNON, N. Y.—The New York, West Chester & Connecticut Traction Co. has made application to the Aldermen to secure a route which will enable them to connect their North Vernon line with the lines proposed from New York to the Boston Road in East Chester. A hearing is set for April 10.

NEW BRITAIN, CONN.—Judge Thayer of the Superior Court, March 24, decided that public convenience required the building of the proposed electric railroad by the Central Ry. & Electric Co. between Plainville and Southington. Work is to be begun now and completed by July 1. E. H. Mather is General Manager of the Central. (March 17, p. 199.)

NORTH CONWAY, N. H.—The North Conway & Mt. Kearsarge RR., which was incorporated in 1883, has had the time extended to complete the building of the road to July, 1902. The object of this company was to build a railroad from North Conway to the summit of Mount Kearsarge. The incorporators are: Lycurgus Pitman, Alfred Eastman, both of Conway, N. H., and Geo. E. Mansfield, Herbert U. Smith and Geo. G. Frost.

OTTAWA, ILL.—The Ottawa Railway, Light & Power Co. has been incorporated by F. S. Dunnell, Jacob I. Warner and others.

OTTAWA, ONT., CAN.—J. R. Booth has made application for permission to build an electric railroad to connect his lumber yards with the Canada Atlantic and the Ottawa, Arnprior & Perry Sound railroads.

PETERSBURG, VA.—John L. Williams & Sons, and Messrs. Middendorf, Oliver & Co., besides securing controlling interest in the Piedmont Traction Co., and the Virginia Traction Co., have also secured the Upper Appomattox County & Electric Lighting Co., of Petersburg. These three companies are to be consolidated in a new company, and several extensions of the electric railroads are promised. The City Council has already granted a franchise for a double track on Sycamore St., and it is expected to have six miles of the road completed and in operation by July 1. James F. Hayward, of Baltimore, is in charge of the new work. A franchise has been granted by the Board of Supervisors of Chesterfield County for the line from Richmond to Petersburg on the old Petersburg turnpike. The road will be 20 miles long, and will be for passengers and freight business. Work is to begin in 30 days, and be completed in one year.

PHOENIXVILLE, PA.—The Montgomery & Chester Traction Co., which proposes to build a 50-mile electric railroad between Phoenixville, Spring City, Royersford and Pottstown, has let contract for a car house, to be located at Spring City, 40 x 175 ft. Contracts are soon to be let for the equipment. (Jan. 27, p. 74.)

PHONETON, O.—The National Traction Co. has been incorporated to build an electric railroad from Columbus to the State line. J. O. H. Hooker and O. P. Waymire are interested.

PLAINFIELD, N. J.—A franchise has been granted to Col. Edwin W. Hine, of the Westfield & Elizabeth St. Ry., for a branch electric railroad from Clark Township to Mountain Side. It is proposed that this system run from Westfield to Springfield and Milburn, and connect with electric railroads in South Orange. The line will also be built to Rahway. (Feb. 10, p. 110.)

QUEBEC, QUE.—Ahearn & Soper, Ottawa, Ont., have the contract for the electrical equipment of the Quebec, Montmorency & Charlevoix Ry. This road will be 28 miles long, and it was recently reported that application will be made to the Canadian Parliament to change the name of the company to the Quebec Ry., Light & Power Co. (Dec. 23, 1898, p. 925.) J. H. Beemer is President.

QUINCY, MASS.—The Braintree St. Ry. is considering an extension from Holbrook to Randolph.

RAQUETTE LAKE, N. Y.—Application has been made by the Raquette Lake RR. Co. for permission to build the 19 miles of proposed road from Clearwater, on the New York Central & Hudson River RR., to Raquette Lake. This road was recently incorporated, with a capital stock of $250,000, by C. P. Huntington, W. Seward Webb, J. Pierpont Morgan, Wm. C. Whitney, Hon. Chauncey M. Depew and Sam'l R. Callaway. The company prefers to operate the road by air power to protect the forests from fires caused by locomotive sparks, but if this is not feasible, electricity will be used. (March 10, p. 181.)

RICHMOND, IND.—Five miles of the proposed Richmond, Oxford, Reilly & Cincinnati Electric Ry. have been surveyed by H. L. Weber, Chief Engineer of the company. (Feb. 17, p. 133.)

The Richmond Inter Urban RR. Co. has been granted a 50-year franchise for the proposed electric railroad. Work is to be begun by Jan. 1, 1900, and the road to be in operation within two years thereafter. This company has the right to carry freight as well as passengers; also mail and express matter. John H. Roling is one of the incorporators. (March 17, p. 199.)

ROME, N. Y.—The Rome City St. Ry. Co. has a franchise to build on East Bloomfield St. This company is about to change its motive power to compressed air. (March 17, p. 199.)

SAGINAW, MICH.—We are officially informed that nearly all the right of way has been secured for the 14 miles of electric railroad to be built by the Saginaw & Frankenmuth Ry. Co. This company was incorporated in August last, with a capital stock of $50,000, and proposes to build between the places named in the title. The officers are: President, Jas. B. Peter; Secretary, I. G. Higgins; Treasurer, H. C. Potter, Jr. It has not been decided how soon work will be begun, but the road will probably be built during 1899. (Sept. 16, 1898, p. 679.)

ST. LOUIS, MO.—Jilson J. Coleman, recently made General Manager of the Central Traction Co., has submitted to the Street Committee of the City Council plans for the proposed tracks along Gravois Ave., and through Spring Ave. to the city limits. (March 24, p. 219.)

The St. Louis & Kirkwood RR. Co., controlled by the St. Louis & Suburban, has filed notice with the County Court of acceptance of a franchise granted in September for an electric railroad from Brentwood to the main line of the Suburban in St. Louis County, on the Florissant road.

SCOTTDALE, PA.—We are officially informed that bids will be asked at once on the required rails, rolling stock, etc., for the 28 miles of electric railroad to be built by the Mt. Pleasant, Scottdale & Connellsville Electric Ry., which was incorporated in February, with a capitalization of $400,000. The proposed rolling stock of this company will be 10 closed motor cars and 8 closed trailer cars. One steel bridge will be necessary for the proposed road. Contracts will be let for the bridge at the same time as other contracts. The officers are: President, W. E. Tustin, Allegheny; Secretary, G. S. Lewis, Crafton; Manager, W. W. Staub, Pittsburgh, and Superintendent, John Byrne. The company's general office is in Scottdale. (March 3, p. 163.)

SEATTLE, WASH.—Winthrop Smith, Albert Stone and Andrew F. Burleigh have a franchise for a street railroad to carry passengers as well as freight. The road is to be standard gage and the cars may be operated by cable, electricity, compressed air or other motive power, and work must be begun by May 1. (March 17, p. 199.)

Surveys have been begun for the proposed 20 miles of road by the Seattle & Tacoma Electric RR. Chief Engineer, Frank Riffle. Henry Bucey, the promoter of this enterprise, states that contracts for bridges will probably be let first. There will be one over the Puyallup River, and one over the White River. Both will require draws. (March 3, p 163; March 17, p. 199.) A franchise has been granted in Tacoma.

The stockholders of the Front St. Cable Ry. are considering extensive improvements. An extension will probably be built. O. D. Colvin, Receiver.

SHELBURNE FALLS, MASS.—The stockholders of the Shelburne Falls & Colrain St. Ry. Co. have voted to petition the Legislature for permission to increase the capital stock to build the bridge across the Deerfield River for a proposed extension.

TORONTO, ONT.—The bill introduced some time ago in the Council for granting a franchise to the Toronto Elevated Ry. Co. (unincorporated), by E. A. MacDonald, has been defeated. (Oct. 22, 1898, p. 787.)

TRENTON, N. J.—The Trenton St. Ry. Co. has been granted an ordinance permitting it to extend its tracks through the village of Lawrenceville. The length of the proposed road will be five miles. Henry C. Moore, Trenton, N. J., is President. (March 24, p. 219.)

TROY, N. Y.—A bill has been introduced in the Legislature to extend the time for building the Troy & New England RR. The original charter provided for building 35 miles of track, of which about 9 have been completed and in operation for some time. J. H. Howard, Superintendent.

WARREN, N. H.—An act to extend the time for completing the Moosilauke RR. Co. to July, 1902, was approved March 8. This company was incorporated in 1889, with a capitalization of $100,000, to build and operate a railroad from Warren to the summit of Mount Moosilauke. The incorporators are: Albert B. Woodworth, Edward B. Woodworth, both of Concord, N. H., and Ira Whitcher, Benjamin F. Brown, Edward F. Mann.

WASHINGTON, D. C.—The work of installing the underground electric system on the lines of the City & Suburban Ry., formerly the Eckington & Soldier's Home RR., is nearly completed, and cars will probably be in operation by the middle of April. The syndicate which controls the C. & S. also owns the Potomac Power Co., located in Georgetown, and power will be furnished from this plant for the operating of the road. Cars equipped with electric motors have already been received by the company.

Oscar T. Crosby, President of the City & Suburban, has recently secured control of various other street railroads in Washington, which will be changed to conform with the system of operation now being installed on the City & Suburban. The contracts for installing the underground system will probably soon be let. The Belt Ry., and the Anacosta & Potomac River RR. will probably be the two first roads changed. The Washington City RR. Co. is the new company formed by the consolidation. (Feb. 10, p. 112.)

WHITMAN, MASS.—The Whitman & Plymouth St. Ry. Co., which proposes to build a street railroad from Whitman to Plymouth, has secured all necessary right of way except through the town of Halifax.

WHITE PLAINS, N. Y.—The extensions proposed by the Tarrytown, White Plains & Mamaroneck Ry. Co. in all amount to about 12 miles. They consist of roads as follows: (1) Beginning at a line between the town of Greenburgh and Tarrytown along Benedict Ave., by various streets to Main St., Tarrytown, to the tracks of the New York Central & Hudson RR.; (2) in the town of Harrison easterly along the Boulevard to Jefferson St., this branch takes in Silver Lake Park; (3) a line will also be built through the village of White Plains, town of Scarsdale, East Chester and Bronxville to the dividing line between Bronxville and Mt. Vernon; (4) also in the town of East Chester along the old White Plains Road, Midland Ave. and Main St. to the city of Yonkers. Certificate for the above extensions was filed with the Secretary of State March 25. David Cromwell, President; Chas. V. D. Peck, Secretary.

GENERAL RAILROAD NEWS.

BALTIMORE & OHIO.—J. P. Morgan & Co., New York, announce to holders of their receipts or certificates for consolidated mortgage 5 per cent. gold bonds of the B. & O., due 1988, that interest advances will be made on April 1 of $22.12 for each $1,000 bond. The reorganization managers announce that pending the issue of new securities, they have arranged to advance to the holders of Mercantile Trust Company's certificates of deposit for bonds deposited, the amounts in cash equal at face value to the coupons representing six months' interest, due Jan. 1 last on the new prior lien 3½ per cent. gold bonds, and the coupons representing three months' interest, due Oct. 1, 1898, and six months' interest, due April 1, 1899, on the first mortgage 4 per cent. bonds, respectively, when issued under the plan of reorganization. The advances will be made on and after April 1, at the office of the Mercantile Trust Co., New York. (March 24, p. 219.)

CANADA ATLANTIC RY.—Secretary A. W. Fleck, of this company, gives notice of a special general meeting to be held in Ottawa, on May 1 next, for the purpose of confirming a deed amalgamating the Ottawa, Arnprior & Parry Sound with the Canada Atlantic, for which applications are now being made to the Parliament of Canada to incorporate the said companies into one under the title of the Canada Atlantic Ry., and to consolidate the debts of the both companies, and substituting new securities in one for the two companies.

CENTRAL MASSACHUSETTS.—President S. N. Aldrich makes the following statement:

I have received notice from Judge Dunbar and Mr. Whipple, who claim to represent large holders of the common stock of the Central Massachusetts Railroad, that the lease of the road to the Boston & Lowell is illegal, and requesting that the directors of the Central Massachusetts demand from the Boston & Maine the return of the road to the stockholders. Messrs. Dunbar & Whipple say that unless the Boston & Maine give up the lease, suit will be brought to break it.

CENTRAL PACIFIC.—Speyer Bros. & Co., New York, announce to holders of various securities of this company that a large majority of each class of bonds, and over 97½ per cent. of the stock have assented to the plan and agreement of Feb. 8, 1899, and that the plan is declared operative. The time for further deposits is extended to April 6. (March 3, p. 163.) Mrs. Stanford is reported to have sold her remaining 22,000 shares of C. P. stock to Speyer & Co., at $52 per share. She made a sale in January of 10,000 shares at $36 per share.

CHICAGO, BURLINGTON & QUINCY.—The stockholders on May 20 will vote on propositions to buy the property and franchises of the Chicago, Burlington & Northern, and of such other leased roads and branches in the state of Illinois as the stockholders may deem proper to include. A large part of the stock of the Northern is already owned by the C., B. & Q.

COLORADO & SOUTHERN.—The Central Trust Co., New York, gives notice that new securities of this company are ready for delivery on each $1,000 bond as follows: In first mortgage 4 per cent. bonds, $650; trust certificates for first preferred stock, $200, and for second preferred stock, $150; for fractional amounts of bonds and stock trust certificates, scrip will be issued as stated in the plan and agreement of the old Union Pacific, Denver & Gulf.

The Central Trust Co., New York, further gives notice to holders of its certificates representing the securities of the U. P., D. & G., 5 per cent. consolidated mortgage bonds; the Denver, Texas & Gulf 5 per cent. first mortgage bonds, and the Denver, Texas & Fort Worth 5 per cent. first mortgage bonds, and 5 per cent. funded interest certificates; also to holders of stamped assented certificates of the Trust Co., representing a deposit of stock of the U. P., D. & G., that these holders of various certificates will receive the securities deliverable under the plan of reorganization at the office of the Trust Co., New York. (Jan. 20, p. 199.)

GENNESEE & WYOMING.—This company was incorporated in New York March 24, with a capital stock of $500,000, as successor to the Genesee & Wyoming Valley (Dec. 9, 1898, p. 887), which went into the hands of a receiver Nov. 15, 1898. The principal office will be at York, N. Y. The Directors are: Joseph N. Smith, Lynn, Mass.; Milo M. Belding, Milo M. Belding, Jr., and Edmonds Putney of New York city; Edward L. Fuller of Scranton, Pa.; Henry D. Fuller of Bayonne City, N. J.; David Hyman of Geneseo, and Frank P. Stade of Westfield, N. J.

LAKE SHORE & MICHIGAN SOUTHERN.—The principal of the $989,500 of 7 per cent. dividend bonds, due April 1, will be paid at maturity at the United States Trust Co., New York. This is in line with the refunding plan adopted last year. (Feb. 11, 1898, p. 111.)

LEHIGH VALLEY.—Drexel & Co. of Philadelphia, have bought $2,000,000 4½ per cent. car trust bonds of this company, of which $200,000 will be retired each year.

LOUISVILLE & NASHVILLE.—The company has drawn for payment 264 of its general mortgage bonds for redemption at 110 on June 1, upon presentation at the company's office, 120 Broadway, New York.

MANHATTAN (ELEVATED).—It is announced that the stockholders have taken over 97 per cent. of the additional $18,000,000 of stock to be issued at par to provide funds for substituting electricity and other improvements.

NEW YORK CENTRAL & HUDSON RIVER.—Stockholders on April 19 will vote on a proposition to lease the Fall Brook and its leased lines, the Syracuse, Geneva & Corning and the Pine Creek, for 999 years from May 1 next; also the Walkill Valley for the term of its corporate existence. The stockholders of the Syracuse, Geneva & Corning will meet on the same date to approve the contract for such lease. (Fall Brook, Feb. 24, p. 147.)

PHILADELPHIA, READING & NEW ENGLAND.—A further installment of 25 per cent. on the assessment of the income bonds A & B, and the preferred and common stock under the reorganization plan, is due for payment at the Fidelity, Insurance Trust & Safe Deposit Co., Philadelphia, on or before April 7. (Feb. 10, p. 111.)

ST. LOUIS & SAN FRANCISCO.—Redmond, Kerr & Co., New York, are offering for sale at 93½ and interest, the $1,962,000 first mortgage 4 per cent. 30-year gold bonds which are to be used to acquire the St. Louis & Oklahoma City from Sapulpa, Ind. Ter., west 103.32 miles to Oklahoma City. (Feb. 24, p. 148.) President Robinson says that these bonds are issued under the mortgage to secure an aggregate amount of $3,462,000 of 4 per cent. bonds, maturing April 1, 1929, and that the additional $1,500,000 is reserved to retire a like amount of St. L. & S. F. Southwestern Division first mortgage 5 per cent. gold bonds, which are subject to call at par. The new bonds are a direct obligation of the parent company and are subject to redemption at 102½ and accrued interest, at the option of the company. The parent company now owns 1,385 miles of road, and operates by contract 256 miles in addition, making a total of 1,641 miles.

ST. LOUIS, IRON MOUNTAIN & SOUTHERN.—The company has arranged with Kuhn, Loeb & Co. to underwrite about $16,000,000 unified and refunding mortgage 30-year 4 per cent. gold bonds, to be issued to take up Texas & Pacific second mortgage bonds, for which offers will soon be made to holders. The new bonds will form a part of a new loan of $30,000,000, and the remainder will be held for refunding any indebtedness of the St. L., I. M. & S., except the general consolidated 5's. It is understood that the new bonds are underwritten at 85, which puts them practically on a 5 per cent. basis. Provision is made for an increased issue of $10,000,000 bonds for new acquisitions and building at the rate not exceeding $12,000 per mile. The privilege is offered to holders of second mortgage bonds of the Texas & Pacific to exchange their bonds at par for 65 per cent. in the new Iron Mountain issue, the new bonds to bear interest from July first next. Deposit of the bonds must be made with the Mercantile Trust Co., of New York, on or before April 15. The Texas & Pacific is known as one of the Gould roads, and owns and operates 1,499 miles. (Feb. 10, p. 11.)

ST. LOUIS SOUTHWESTERN.—The Governor of Texas, on March 21, vetoed the bill authorizing the consolidation with this company of the Tyler Southeastern, 88½ miles. (Dec. 9, 1898, p. 887.)

SHERMAN, SHREVEPORT & SOUTHERN.—Governor Sayres of Texas has vetoed the bill granting the M., K. & T. the right to buy this road. (March 24, p. 220.)

WEST VIRGINIA & PITTSBURGH.—Brown Bros. & Co., New York, through Brown, Shipley & Co., London, have arranged to advance to the holders of 5 per cent. first mortgage gold bonds of 1990, an amount in cash equivalent to the face value of the coupons falling due April 1 and Oct. 1, 1898, and April 1, 1899, with interest on the overdue coupons at 5 per cent. per annum. Holders of Brown, Shipley & Co.'s certificates of deposit should present them at the office in New York, on or before April 1. (Jan. 20, p. 55.)

Electric Railroad News.

BALTIMORE, MD.—A circular has been issued by Brown Bros. & Co., who have formed the United Railways & Electric Co. of Baltimore, offering income mortgage accumulative 4 per cent. bonds, also accumulative preferred stock, bearing same interest, in place of the $14,000,000 of preferred stock at first authorized.

BROOKLYN, N. Y.—The syndicate headed by former Governor R. P. Flower has completed the negotiations for the consolidation of the various street and elevated railroads in Brooklyn. The Brooklyn Elevated RR. was absorbed by the Brooklyn Rapid Transit Co. last week, and Frederick Uhlmann has retired from the management and receivership. The following new directors were elected the same day: Frederic P. Olcott, Clinton L. Rossiter, T. S. Williams, William Halls, Jr., Frederick Uhlmann, William F. Sheehan, Nicholas F. Brady, Fred S. Flower, John S. George, Ira A. Kip, Jr., John B. Taylor, John V. Clarke and Harry Folger.

By the terms for the acquisition by the Brooklyn Rapid Transit Co. of the Brooklyn Union Elevated RR. Co., it is stated the stockholders will receive in part payment stock of the Rapid Transit Co. of the recent issue of $25,000,000, of which $9,500,000 has already been issued, to acquire the Nassau Electric RR. The Brooklyn Rapid Transit Co. recently secured control, by purchase, of the Brooklyn & Brighton Beach RR., and it is said the acquisition of the Kings County RR. will soon be accomplished.

Holders of Brooklyn Union Elevated RR. stock are notified by H. B. Hollins & Co. that their holdings will be received and paid for in cash until 3 p. m. April 3.

BUFFALO, N. Y.—J. P. Morgan & Co., New York, are reported as having completed the purchase of a controlling interest in the electric railroads in Buffalo and Niagara Falls, for the consolidation of which the International Traction Co. has been incorporated. The roads absorbed are as follows: Buffalo Ry. Co., Buffalo Traction Co., Buffalo, Belleville & Lancaster Ry., Buffalo & Niagara Falls Electric Ry., Buffalo & Lockport, Niagara Falls & Clifton Bridge Co., and the Lewiston & Queenston Bridge Co. (March 24, p. 220.)

Announcement is made that the Buffalo Traction Co., under date of Dec. 1, 1898, gave a mortgage for $2,345,000 to the Metropolitan Trust Co., New York, as trustee, to secure 5 per cent. gold bonds. The deed was signed by President Edwin G. S. Miller. Secretary Bissell is reported as stating that the mortgage is in the interest of the Traction Co., and has nothing to do with the consolidation now taking place in Buffalo.

DALLAS, TEX.—The Dallas Consolidated Electric St. Ry. Co. has been sold to a syndicate of Des Moines, Ia., capitalists, which includes G. Von Ginkel, T. M. Earle and P. H. Bousquet, for $900,000.

GALVESTON, TEX.—Judge Bryant in the United States Circuit Court, has entered the final decree in the Galveston City RR. receivership case, and has set Sept. 5 as the date for the sale of the property, which will be made to satisfy two claims amounting to about $1,000,000. The floating debts aggregate $180,000. (Nov. 11, 1898, p. 822.)

HAVANA, CUBA.—An order has been issued by the Judge of the Cerro Court, sustaining the decision of the lower court, declaring void the sale of the Ferro Carril Urbano to the Harvey syndicate.

INDIANAPOLIS, IND.—The prospectus issued by the Indianapolis St. RR. Co., which was recently incorporated as the company which acquired the property and franchises of the Citizens' St. Ry. Co., and the City Ry. Co., states that the capital stock will be $5,000,000, and that there will be a consolidated 40-year mortgage, bearing 5 per cent., to the extent of $4,000,000. Of the consols there will be offered $3,000,000 for subscription, and $800,000 will be retained in the treasury to meet underlying bonds at maturity, and $200,000 for future extensions of the road. The Solicitors' Loan & Trust Co., Philadelphia, Pa., is trustee. This system is now being rapidly converted into an electric road, which work will probably be completed during the present year. The company now operates 78 miles of road—23¼ by electricity and 54½ miles by horses and mules; 15 miles of track have been lately relaid, and are ready for electrical equipment. The property during the past five months has been earning at the rate of $930 per annum. (March 10, p. 182.)

JERSEY CITY, N. J.—At the annual meeting of the North Jersey St. Ry. Co., March 27, the following directors were elected: A. J. Cassatt, E. F. C. Young, Thos. Dolan, P. A. B. Widener, John D. Crimmins, J. Rosevelt Shanley, Leslie D. Ward, W. L. Elkins, John F. Dryden, Peter Hauck, John F. Kehoe, F. O. Matthiessen, David Young, Geo. F. Perkins and A. Q. Garretson.

The Consolidated Traction Co., which is leased to the North Jersey, elected the following directors on the same day: C. A. Griscom, R. C. Jenkinson, Jeremiah O'Rourke, Thomas F. Ryan, Elisha B. Gaddis, Almeric H. Paget, B. M. Shanley, Leslie P. Ward, Albert Jennings, Henry Lembeck, William J. Davis, B. M. Shanley, Jr., John E. McArthur, Dudley Farrand, and James K. Corbiere.

MILWAUKEE, WIS.—Matthew Slush, President of the Milwaukee, Racine & Kenosha Electric Ry. Co., which was recently taken control by the Milwaukee Electric Ry., announced on March 23 that he, with associates, had purchased the Belle City Electric Ry., which operates 12 miles of road. The capital stock of the company was $150,000, and it is said that Mr. Slush has secured 90 per cent. of it.

ST. LOUIS, MO.—A meeting of the stockholders of the Lindell Ry. Co., Missouri RR., Union Depot RR. Co., and the People's Ry., will be held April 4 to consider plans for reorganization and to perfect the consolidation now being brought about by Brown Bros. & Co.

A meeting of the stockholders of the Lindell Ry. Co. is set for April 20 to vote an increase in the capital stock from $2,500,000 to $10,000,000, and also to obtain the consent of stockholders to an increase of bonds to the amount of $10,000,000, of which sufficient amount is to be reserved and applied hereafter for the redemption or payment of the existing bonded indebtedness of the company, and of any other street railroad companies which the Lindell may acquire.

VICTORIA, B. C.—D. A. Shiles, of New Westminster, has been appointed General Traffic Manager of the Victoria and New Westminster systems of the British Columbia Electric Ry., and will have his office in Vancouver. Mr. Shiles has been with the company since the building of the road.

TRAFFIC.

Decision on Export Rates via Boston.

The Interstate Commerce Commission, in an opinion by Commissioner Prouty, has announced its decision in the case of Edward Kemble against the Boston & Albany Railroad Co. and others. The principal rulings in the decision are as follows:

"It is not, as matter of law, a violation of the act to regulate commerce to make a lower rate to the port of export upon traffic which is exported than upon that which is locally consumed, for the export rate is, in essence, the division of a through rate. The decision of the Commission in the import rate case having been overruled by the United States Supreme Court, it follows that carriers are not, as a matter of law, prohibited from making rates from points in the United States to points in foreign countries, or from points in foreign countries to points in the United States, of which the inland division, or share accruing to carriers within the United States, is less than the tariff rate of such carriers on domestic shipments of similar commodities. Through tariffs showing total charges on export traffic from interior points in the United States to foreign destinations cannot, owing to the fluctuation in ocean rates, usually be determined and published in accordance with section 6 of the act to regulate commerce; and, if the inland carrier publishes and maintains its division of the through export rate it apparently does all that it can do, and all that it is required to do under that section; but if the inland carrier, instead of receiving a fixed inland division, makes through rates in fact, of which its division fluctuates, a question arises as to the publication of such rates which is not passed upon in this proceeding. Import and export traffic is not removed from the jurisdiction of the commission by the decision of the United States Supreme Court in the import rate case, but, on the contrary, the effect of that decision is to extend such jurisdiction; and the commission has full authority to pass upon the grievance of any individual or locality which is alleged to arise from rates upon export or import goods as compared with rates on domestic merchandise. It seems that these carriers make two rates on grain and sixth class merchandise from Chicago to Boston. If the commodity is for local consumption the rate is two cents above the rate to New York; but if it is to be exported the Boston rate is the same as the New York rate. The export traffic is delivered to the ocean carriers at East Boston, which is a few miles more distant than Boston from Chicago, and the export rate, which is essentially the inland carrier's division of a through export rate, applies in fact, only to East Boston. The domestic rate to Boston is substantially as was fixed by the commission in Kemble vs. the Lake Shore & Michigan Southern Railroad Company. Whether, as matter of fact, the domestic rate to Boston is unreasonably high, or whether the export rate through Boston unduly discriminates against Boston are questions which were involved in cases heretofore decided by the commission; and their reconsideration in this case is not warranted by any facts developed at the hearing. The commission decides that the long and short haul clause is not violated by the lower export rate to East Boston more than the domestic rate for the shorter distance to Boston and that the petition should be dismissed."

Chicago Traffic Matters.

Chicago, March 29, 1899.

General passenger agents of the roads west of Chicago are between his satanic majesty and the blue sea. They do not know just what course to pursue to meet the cut-rate competition of the Northern Pacific and the Great Northern lines to the far West. It was at first thought that the rates of these roads could be easily met by the central routes, but the Southern Pacific has given all its eastern connections notice that it will not absorb any part of the reductions that may be made; that it will insist on its present proportion of the through rates. Officers of the central lines now have two propositions before them. One is entirely to ignore the competition of the northern lines, and the other is to make a rate of $5 from Chicago to the Missouri River, $15 from Chicago to Colorado common points, $25 to Ogden, and $29 to Montana points, the tickets to be sold on the rebate plan to protect intermediate business. By the northern lines the fare from this city to Montana points is now $29, and the combinations to the same territory from here via the Missouri River is $69, which allows a scalp of $40. While the rates are nominally second class, there are no second class rates in effect east of Chicago or west of Colorado, so that whatever rates are put in will necessarily be first class.

There has been much talk about faster passenger train time east of Chicago. As usual, the coming mail contracts are at the bottom of it. It is highly improbable that the eastern lines will cut the present time of their passenger trains, but the Vanderbilt roads have reduced the time of their mail trains, Chicago to New York, as the Pennsylvania was doing better.

Lake and rail rates for the coming season will be the same as they were last year. This has been agreed to by the rate adjusters. In this connection it may be said that the Wisconsin Central has severed its relations with the Gordon line of lake vessels, and will contract with other boats during the coming season. The Gordon line includes several large grain carriers plying between Milwaukee and Buffalo.

Presidents of the western roads who went to Washington to confer with members of the Interstate Commerce Commission regarding rates, have got home. They say that the meeting was highly satisfactory to the representatives of the Government and the railroads.

The attempted reorganization of the Western Passenger Association, to include the trans-Missouri lines, has failed. The Union Pacific refuses to go into the one association plan; it insists on having an independent organization of the lines west of the Missouri River, to be governed from headquarters in Omaha, or a place equally near the territory to be governed. Just what will be done nobody hazards a guess.